FEEDSTUFFS

★ A WEEKLY NEWSPAPER ★

FOR THE FEED MANUFACTURER, JOBBER, BROKER and DEALER

Volume 29—Number 45 NOVEMBER 9, 1957 1 Year $4, 2 Years $7

Livestock Industries Must De-emphasize Fat Production

BUFFALO — The American livestock industries have little alternative but to deemphasize fat production, feed men were told at the recent Cornell Nutrition Conference in Buffalo.

This statement was made by Dr. Herrell DeGraff of the Cornell Graduate School of Nutrition in surveying trends in the market for and consumption of fats and oils.

Dr. DeGraff was one of the participants in a symposium on feeding for leaner meat. (Other talks are summarized in a report on page 22 of this issue of Feedstuffs.)

He pointed out that fats and oils have been depressed commodities in recent years—the No. 1 reason for this being the fact that the U.S. has shifted to a surplus position, now being the largest exporter rather than a major importer. Fats and oils are now selling at only two thirds their prewar price.

Adverse attitudes toward food fats have been one reason for depressed

(Turn to FAT, page 105)

Harold J. Buist of Allied Mills Dies

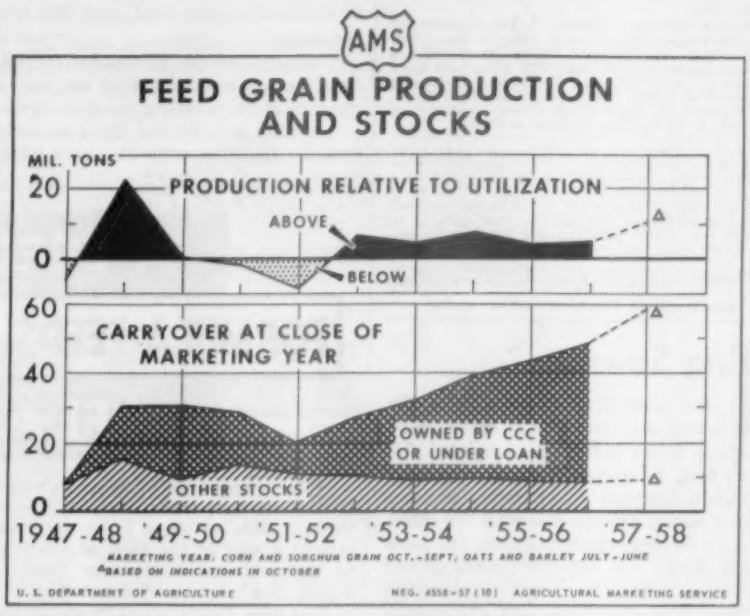
CHICAGO—Harold J. Buist, president and chairman of the board of Allied Mills, Inc., Chicago, died Nov. 8 at Highland Park (Ill.) Hospital, following a coronary attack suffered on the evening of Nov. 6 at the Chicago Curling Club. He was 60 years of age.

Mr. Buist's death was unexpected by his family and associates as he had been in apparent good health prior to the attack and had been at his office regularly.

He helped organize Allied Mills, Inc., in 1929, and was the company's first comptroller, becoming secretary-treasurer in 1933. He advanced to executive vice president in 1941, and was elected president and chairman of the board on July 24, 1945, to succeed John B. DeHaven, who died in June, 1945.

Mr. Buist was a prominent feed industry leader. He was a member of the board of directors of the Ameri-

(Turn to HAROLD BUIST, page 104)



OVER-ABUNDANCE—Feed grain production has exceeded total consumption in each of the last five years. The result has been a steady increase in stocks under the price support program. Total carryover this year is twice that of five years ago, and another increase is expected to result. The top half of the graph shows the amount of over-production, and the bottom half shows what the over-production has been doing to the stocks carried over each year.

Feed Grain Stocks Adequate To Assure Supply in 1958-59

WASHINGTON — Adequate supplies of feed grains for the 1958-59 feeding season—to say nothing about the current feeding year—are practically assured by the record production of feed grains this year, the U.S. Department of Agriculture reported in the 1958 outlook issue of its feed situation report.

"Even after allowing for liberal feeding of livestock in 1957-58, a carryover of around 57 million tons into the 1958-59 season is in prospect," the report said. "Carryover stocks of this size would be sufficient to provide adequate feed concentrate supplies even if we should have a severe drouth in 1958."

The total tonnage of high protein feed available for feeding in the current feeding year is expected to be a little larger than the supply for 1956-57.

Total supply of the protein feeds has increased steadily for several years, and it reached a high of nearly 12.9 million tons in 1956-57. A record soybean crop is available for crushing, and soybean production probably will be a little larger than in 1956-57, but output of cotton and linseed meals is expected to be smaller.

At the same time, there is a slight increase in the number of protein-feed-consuming livestock and the sup-

(Turn to USDA OUTLOOK, page 101)

• • •

Seen for '57-58: Corn Averaging $1.10, Soy at $45

BUFFALO—Somewhat lower feed prices are in prospect for the 1957-58 feeding season, compared with the past year.

This was pointed out by Dr. L. C. Cunningham, Cornell University agricultural economist, in a talk on the feed supply and price outlook for 1957-58 at the recent Cornell Nutrition Conference in Buffalo.

During the 1956-57 feeding season, the farm price of corn in the U.S. averaged $1.21 bu. At Chicago, the 12-month average price for No. 3 yellow corn was $1.31 bu. Dr. Cunningham went on to point out that the corn support prices for the 1957 crop have been lowered from the 1956 levels for both compliance and non-compliance corn.

During the year ahead, he said, the price of corn is expected to be

(Turn to CUNNINGHAM, page 101)

8-10% Boost In Spring Pig Crop Indicated

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—U.S. Department of Agriculture statistical material continues to indicate some problems in the year ahead for at least some phases of the feed business.

Huge supplies of cheap grains and indicated advances in swine production in 1958, with lower hog prices, are the principal trouble spots.

The prospective hog production increase—following favorable prices in 1957—is noted in the USDA's latest report on the livestock and meat situation. However, the report appears to be conservatively optimistic while indicating an increase in the spring pig crop of perhaps 8 to 10%.

8 to 10% Increase

USDA noted that producers in 10 states in September planned to step up production in their December-February farrowings by 7%. The total 1958 spring pig crop (December-May) will be up at least this much, USDA now says, and "probably a little more—perhaps 8 to 10%."

Previous conversations with the USDA livestock editors indicated that they believed that a major influence in helping to maintain hog prices this season is the cattle situation, with reduced beef supplies foreseen.

(Turn to PIGS, page 101)

Turkey Prices Edge Up Despite Record Storage

MT. MORRIS, ILL.—Despite large storage holdings, turkey prices have started to show some improvement after a long period of stagnation, the National Turkey Federation points out.

In its official publication, the federation said a telephone survey of field conditions indicates a slight but definite upturn, ranging from 1@3¢, being paid to growers. The strengthening has been more noticeable in hens, the report said.

The trend is traditional in the turkey industry, according to the report. In seasons of plentiful supply of early turkeys, prices usually stagnate until about Oct. 20, when holiday buying begins to pick up.

Some industry authorities expect continued improvement through the holiday season in prices of consumer sizes, but little change in the market for heavy toms, at least until the storage holdings start declining. The prices for heavy toms will climb if holdings start declining with relative rapidity and buyers show more interest.

Storage supplies of turkeys this year on Sept. 30 were at record levels of 149,987,000 lb., about a 50% increase over the same date last year

(Turn to TURKEYS, page 101)

FEEDSTUFFS *Features This Week*

NUTRITION REPORTS: Reviews of extensive nutrition reports will be found on **pages 6** (Oklahoma), **7** (Alabama), **10** (California), **22** (Cornell) and **58** (mineral symposium).

NEW MILL: A new Virginia feed plant is described on **page 34**.

SWINE RATIONS: Possibilities in the use of pelleted barley-based feeds for swine are described on **page 45**.

FEED SELLING: The changing pattern of feed distribution over a wide western area is outlined on **page 52**.

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The Forecasting Season

THIS is the season for many things. For Corn Belt farmers, it is the season for getting the crop safely put away. For out-of-doors enthusiasts, it is the hunting season, and for football fans, it is a period of intense interest in whether or not old Siwash is going to look as miserable in its remaining games as it did in the first half of the season. Also, the new possibly seasonal sport of sputnik watching has developed some followers across the land.

Of these, only the first activity has a direct relationship to the also-seasonal activity of squinting at the feed supply and demand estimates and trying to come up with some estimates of how things are going to work out in the feed business in the 1957-58 feeding year. However, if one wants to stretch a comparison here and there, some of the elements of hunting, football-rooting and sputnik-gazing can be found in this seasonal activity of possibly keenest interest to many feed men: economic forecasting.

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THE economists, of course, kick off the crystal ball to start this game, and then it's up to the individual dopester to keep his eye on it. Like the sputnik, the ball flashes brighter at some times than at others.

Fortunately for the feed industry, it has available the sound set of figures compiled each year by the American Feed Manufacturers Assn. survey committee (Feedstuffs, Nov. 2, page 1) to serve as a principal guide to the economic factors that will affect the business in the current feeding year. Assistance also is available in the U.S. Department of Agriculture's outlook information published in the October Feed Situation report (page 1). Interpretations of what the figures mean, as shaded by political considerations and other factors, are deftly analyzed by news reporters such as Feedstuffs' John Cipperly. These observations often can be more significant than the actual columns of figures developed by the economists, as many veteran market watchers will verify.

There is little need to go into an extensive review of the over-all figures as they have been and continue to be regularly exposed in the news columns. It should be emphasized once more, however, that feed supplies have reached a whopping total, and expansion of livestock feeding is certain to occur.

How much it will expand, of course, holds the answer to most of the questions uppermost in the minds of feed men who are planning their operations for the year ahead. Again, the economists have put some hard and realistic thinking into forecasts of animal population. The survey committee, for example, looks for a 7% increase in hog numbers in 1957-58. It looks for a 5% increase in broiler numbers, 3% fewer layers in flocks and a 5% increase in chickens raised. The committee expects no change in turkey or beef cattle numbers.

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USDA economists use the device of summarizing their expectations of the increase in animal numbers on an "animal unit" basis. They estimate that the number of units will total 164 million in the current feeding year, compared with 162.8 in the 1956-57 year.

Current USDA estimates of the hog situation point to a somewhat greater expansion in numbers than the AFMA figures indicate. USDA tentatively looks for an 8-10% increase while looking to its December 20 pig crop report on farrowing intentions for a more definite measurement.

So it is evident that, for hogs, as well as possibly several other categories of livestock and poultry, the final score has not been flashed on the board. The wise watcher will continue to rely on the best-informed commentators as changes in the outlook become apparent.

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MEANWHILE, it would be well to take a closer look at the protein portion of the supply outlook. These estimates are subject to some change, also, depending much on soybean and soybean oil export developments and also somewhat on production prospects in the number of industries which supply feed proteins as byproducts. Over-all feed supplies are large because of the huge grain crops, but it is now expected that protein supplies will closely match feeding requirements. The survey committee indicates that 14,080,000 tons will be available to just match the needs of the larger numbers of animals it expects to be fed. The USDA figures show a similar situation.

While the feed industry will have heavier-than-usual competition from home-grown grains, its work obviously is cut out for it. Feed men have a major responsibility of seeing that their products, which insure adequate protein balance in the diets of animals, get to the farms and ranches so that animals are fed in the most efficient way possible. As estimates of various kinds tend to circle in fairly predictable orbits, the feed man can keep one eye on them while marking off a straight path of serving his customers.

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Out of This World

THERE is plenty of comment on satellites and such in the newspapers, on TV and elsewhere, and we need not add to the conversation. (This is a specialized publication.) However, a TV comic the other night got by with one that gets over into our field a little. He said that cows would be sent aloft in artificial moons next, and this would be the "herd that was shot 'round the world."

Which, for no particular reason, reminded us of a remark by a feed nutritionist who said that he was sure we would see a one-for-one feed conversion ratio before the first earth man sets foot on the moon.

Which, just for fun, gives us a chance to pass on the unlikely observation that the Russians came in second to the feed industry with its high, fat pellets.

A FEEDSTUFFS FORMULA FEEDS: HOW'S BUSINESS? FEATURE

There appeared to be no uniform up or down trend in formula feed sales during the past week. Varying weather conditions, the shifts in demands for turkey feeds to other types and the large supply of feed grains may have played a part in the lack of a pattern. Snow in the latter part of the week in the northern states may help move more dairy and beef feeds, it was hoped. Many areas reported that October feed business was no better than a year ago. Other areas reported that plants were operating two full shifts with even a little extra time needed this week to keep up with orders. The index number of feedstuff prices declined .4 point to 72.6 this week compared with 80.9 a year earlier. The feed grain index was down .6 point to 66.2 as against 75.9 a year ago. (Feed ingredient details on pages 102-104.)

Southwest

The formula feed business this week showed no improvement over the previous week, and was even slightly slower for some mills. Sales volume was considered only fair. The occasional mill that was able to report a little pickup was quick to admit that it was far from rushed.

Wet weather and good forage growth were some of the reasons cited for a lack of buoyancy to business. Many cattle were still out on pasture, and wheat fields were providing good grazing. Because it has been difficult to harvest feed grain crops, livestock has been turned out in fields in some cases.

On the whole, cattle feed was moving fairly good and hog rations were in good demand. Laying feeds were meeting substantial interest despite the smaller number of birds. As expected, turkeys were going to market fast and that feed outlet is about dried up. Broiler feed demand was termed good by some mills and very slow by others.

Running time this week was down a shade from the previous week. The average was a little less than five days because very few mills expected to run on Saturday. Prices were expected to be unchanged on many feeds, up 50¢ ton on high energy feeds and down 50¢@$1 on protein rations.

Northwest

Several feed manufacturers reported that their October feed sales were up compared with October of last year. The period of Nov. 4-8 also was reported as a fairly good week and the season's first snow which was falling Nov. 8 caused feed men to feel optimistic about a further pickup in business in the immediate period ahead.

Although cattle feeds perked up some, the snowfall could cause an acceleration in beef feeding and dairy ration sales promptly because grazing would be seriously curbed. Many pigs were moving into the growth stage where they need high protein feeds and this caused a fairly good movement of hog feeds and concentrates.

The turkey feed business had almost died out. Hen turkeys were selling on the farm at from 24@26¢, which was about a 5¢ premium over tom prices which ranged from 19@20¢. Feed men said these prices were at the break-even point or just slightly above.

Egg prices continued to be good and although the volume of egg feeds sold was less than feed men would like to see, there was the prospect that this type of feed would continue to be a steady mover this winter because laying flock owners were keeping old layers in considerable numbers in the hopes of getting several more months of production from them.

Feed grains in large quantities were available at comparatively low prices and feed ingredient traders were unanimous in agreeing that their business was slow. Mixers apparently were limiting their purchases to nearby requirements. Feed prices were mainly unchanged.

Pacific Northwest

Feed ingredient market trading saw buying interest remain on the orderly side and confined mostly to nearby needs while offerings were not pressed for sale despite the fact that there appeared to be ample supplies of all feedstuffs.

Prices for ingredients were unchanged except for lower soybean and fish meal listings. Feed mixers were quoted 50¢ to $1 ton lower values for soybean meal while fish meal prices dropped $3.50 ton and meat meal prices were unchanged to $5 lower.

Sales of dairy, poultry and livestock formula feeds were marked by mostly unchanged quotations. Turkey and broiler feed sales continued to drop off on a seasonal basis while egg mashes continue to move at a volume rate. Turkey industry observers reported that close to 90% of the

(Turn to MARKETS, page 106)

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Most of our great food empires were built on a foundation of exceptionally good flavor. From Hot Dogs to Chewing Gum, this success story is the same. Millions of dollars are spent annually by these leaders to maintain the perfection of lasting and appealing freshness in their products. Now the leading feed manufacturers have come to recognize that animals can also be quite choosey about their eating habits. Good nutritional balance is not enough. The feed must have "just the right flavor" or the animals won't eat it. So the constant objective of the feed nutritionist is to accomplish for animals what "flavor" has done for humans—make them come back for "seconds".

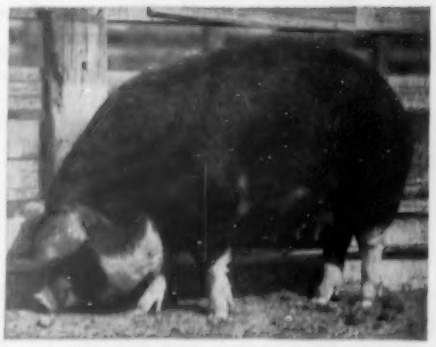
SUCRO-FLAVOR is an all-purpose *sweet feed* flavor with all the qualifications needed for *building great feed empires* on a "foundation of exceptionally good flavor". It is an intensely sweet concentration of taste-tested feed flavors and BHT antioxidant in powdered form. One pound of SUCRO-FLAVOR is equal to 100 pounds of sugar in flavored sweetness, yet it does not have the tiring effect that high concentrations of sugar are known to have on the animal's appetite. It produces "high sweet" flavored feeds without causing flushing or other ill effects in birds and animals. SUCRO-FLAVOR adds sweet taste appeal and lasting flavor freshness to feed by eliminating unpleasant rancidity odors and masking the unpleasant taste of medicinal and chemical additives. It stabilizes fats and retards loss in potency of important vitamins, such as A and E, which prevent many of the deficiency diseases of animals. *SUCRO-FLAVOR makes any good feed better and keeps it better until the sack is empty.*

1 STARTER

Weaning time—or anytime livestock and birds are switched to an unfamiliar feeding program—is a critical time in feeding. This change-over is quick and easy when the mouth-watering sweetness of SUCRO-FLAVOR is added to the feed. Only 2 pounds of SUCRO-FLAVOR is needed per ton of Chick, Poult, Pig and other Starter Feeds. By eliminating other flavorings, and reducing the maximum amount of sugar recommended for "sweet-tooth" type Pig Feed Starters to the minimum amount of carbohydrates required for nutrition, *the saving on sugar alone is well over $10.00 a ton of feed!*

2 GROWER

For this second critical point in feeding—when the life, health and future productive capacity is at stake—one pound of SUCRO-FLAVOR per ton of Grower Feed insures healthy appetites for Chickens, Turkeys, Cattle and Swine. This gradual letdown in sweetness from the maximum needed in starter rations holds the animals' interest with "just the right flavor" at this growth stage. The elimination of other antioxidants and such flavors as Anise, Carob, Fenugreek, Licorice and excessive amounts of molasses, means *an ingredient replacement savings of well over $7.00 a ton of feed!*



3 FINISHER

This "feed-out" stage—when the proper intake of correct finishing rations is a "must" for profitable production—is equally as critical as the starter and grower programs. Only *one-half* pound of SUCRO-FLAVOR per ton of Finisher Feed gives maximum taste appeal for Laying Hens, Ducks and Turkeys, Beef and Dairy Cattle, Hogs, and Sheep at this stage. This continued gradual reduction of flavor induces the animals to continue relishing the feed with daily regularity. *In addition to the "appetite insurance", potential savings in ingredient replacement costs in this part of the program are more than $7.00 a ton of feed!*

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Contract Output of Eggs to Spread, Hatcherymen Told

MINNEAPOLIS — The prediction that contract production of eggs will spread to all egg producing areas of the U.S. was made by Don Turnbull, executive secretary, American Poultry & Hatchery Federation, this week.

Mr. Turnbull was one of the speakers at the 30th annual convention of the Minnesota Poultry Hatchery Assn. Nov. 5-7 in Minneapolis.

Contract production of eggs may not become as universal as broiler contract farming, Mr. Turnbull said. But it will certainly spread as a tool for producing more high quality eggs in quantity, he stated.

As an example, Mr. Turnbull cited the case of an Arkansas farm which has 100,000 layers owned by a hatchery. The hatchery supplies the chicks and the feed, and the farmer contracts to manage and direct flock production in the manner specified. This puts the farmer in the role of a salaried person, Mr. Turnbull said, which in itself is not unusual or evil.

Egg Consumption Drop

Mr. Turnbull expressed concern over the 9% per capita drop in egg consumption since 1917. "This is the most serious problem in the egg industry today," he said. "There appears to be no easy solution."

The housewife generally is still ignorant of what constitutes a good, fresh egg, Mr. Turnbull said. Surveys across the nation show that 50% of the housewives buy their eggs from some one other than the grocer. Here's an educational job to be accomplished, he said. If the housewife can be assured that she can get good, fresh eggs at her grocery store, then she will change her buying habits.

Irving Brown, Brown's Hatchery, Minneapolis, was elected president of the association. Ray Halsey, Rochester, Minn., was named vice president, and L. L. Baumgartner, Litchfield, Minn., was reelected secretary-treasurer.

Minnesota hatcherymen at the meeting were advised to act positively to help egg producers operate profitably if the state is to remain fourth nationally in egg income.

Voicing this advice was Dr. Elton Johnson, head of the department of poultry husbandry, University of Minnesota. Dr. Johnson urged hatcherymen to encourage:

1. Larger size flocks; 1,000 laying hens or more should be the average size.

2. A more direct marketing program to cut the number of times eggs are handled.

3. Reduced production costs which can be achieved through efficient feeding methods and economical use of family labor.

Dr. Johnson said that producers "must improve and maintain the quality of their eggs at the producer level or the price for eggs will drop lower and lower." Minnesota, he said, has the disadvantage of being a surplus egg state, exporting 70% of its eggs. This is a price depressing factor, and is further reason for Minnesota producers' attaining a reputation for high quality eggs and producing them at the cheapest possible cost.

Floor Plan More Efficient

Although caged layer systems enable the producer to handle the birds more easily, they are not as efficient as floor plans for egg production in Minnesota, Dr. Johnson told the hatcherymen. "Labor efficiency is not as high in the cage system as with the floor method," he stated.

Dr. B. S. Pomeroy, department of veterinary medicine, University of Minnesota, said unsatisfactory progress has been made in recent years to combat fowl cholera and that hatcherymen should stress the carrier dan-

(Turn to HATCHEY, page 8

Pfizer Sales, Earnings Reach New High

NEW YORK — Sales and earnings of Chas. Pfizer & Co., Inc., for the first three quarters were higher than for any similar period in the 108-year-old drug and chemical firm's history, according to the nine-month report issued to shareholders Oct. 28.

Sales were up 17% from $128,367,433 to $150,259,294 while net earnings increased 16% from $13,329,450 to $15,497,480. Earnings after payment of preferred dividends weer equivalent to $2.86 per share on 5,371,976 shares of common stock outstanding compared with $2.47 per share on 5,221,962 shares outstanding at the end of the first nine months in 1956.

In a message to shareholders John E. McKeen, president, reported that the company's business gained considerable momentum during the third quarter with volume in September reaching the highest level for a single month in the firm's history.

"Thes trong trend appeasr to be continuing and we are hopeful that sales in 1957 will cross the $200 million mark for the first time," Mr. McKeen said. Mr. McKeen indicated that volume is being influenced to some extent by the stockpiling and use of antibiotics in the current worldwide influenza epidemic.

Mr. McKeen also attributed the over-all gain over last year to higher sales of bulk chemicals and agricultural products and to increased business overseas.

The Pfizer president said the company is now engaged in an extensive expansion of its research, production and distribution facilities both in the U.S. and abroad. He expressed confidence that this program "will provide a broader base for continued growth."

George Wilkens Gets Exchange Promotion

MINNEAPOLIS — George Wilkens has been elected executive vice president of the Minneapolis Grain Exchange. The announcement was made by the board of directors at the first meeting of the new board.

Mr. Wilkens has served as secretary of the Minneapolis Grain Exchange since 1949, and has worked on grain marketing and economic problems in the area served by the exchange. Recently Mr. Wilkens has been coordinating activities regarding national agriculture policies affecting the Minneapolis Grain Exchange and the grain trade through the exchange affairs committee. It is anticipated more time will be devoted to problems in this area.

Mr. Wilkens is a graduate of the University of Minnesota, and has taught vocational agriculture at Jackson, Minn. He also served for two years as agricultural economist and statistician with the Federal Reserve Bank of Minneapolis.

National Alfalfa Begins Work on New Plant

LAMAR, COLO.—The National Alfalfa Dehydrating & Milling Co. has broken ground for its new dehydrating plant at Clarksdale, Ark., it was announced by Henry A. Hoffmann, president.

This plant—plans for which were reported previously in Feedstuffs—takes the company into an area not previously served, Mr. Hoffmann noted.

The company has been expanding its activities on a nationwide basis in recent years, Mr. Hoffmann said, and the present step marks another phase in the long range program of the firm. He said the company will make further additions whenever advantageous marketing opportunities present themselves.

(Another new plant was announced in Feedstuffs Nov. 2, page 8.)

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
August 31	1,007	803	739	839	131	530	1,589	1,620
September 7	939	898	773	866	189	421	1,754	1,420
September 14	881	854	666	775	187	416	1,772	1,543
September 21	777	494	587	762	113	411	1,846	1,471
September 28	903	506	634	723	100	458	1,709	1,637
October 5	863	535	737	770	164	513	1,740	1,503
October 12	874	535	646	744	144	425	1,627	1,398
October 19	884	508	664	754	106	425	1,787	1,286
October 26	974	503	614	867	118	366	1,630	1,446
November 2	860	548	688	771	122	456	1,489	1,397

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
August 31	1,271	524	1,939	296	5,088	229	1,911	1,284
September 7	1,282	495	2,087	277	4,995	236	2,063	1,214
September 14	1,218	516	2,063	302	5,013	206	1,921	1,283
September 21	1,185	479	1,977	350	4,832	255	1,884	1,258
September 28	1,176	433	1,977	288	4,875	206	1,883	1,267
October 5	1,176	488	2,059	286	4,838	228	2,001	1,323
October 12	1,105	442	2,068	344	4,826	182	1,978	1,315
October 19	999	353	2,039	284	4,927	193	2,020	1,234
October 26	1,130	336	1,930	334	4,846	167	1,920	1,200
November 2	1,195	437	1,991	286	4,882	182	2,051	1,273

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1957	Total 22 areas 1956
August 31	1,972	339	1,806	216	107	919	24,858	23,718
September 7	1,978	416	1,874	220	113	836	25,006	22,279
September 14	2,062	379	1,835	218	118	945	24,873	21,932
September 21	2,019	402	1,877	178	120	932	24,200	22,013
September 28	2,007	340	1,836	193	94	747	23,992	22,364
October 5	1,899	378	1,828	179	87	965	24,660	22,063
October 12	1,922	392	1,962	176	134	963	24,102	21,830
October 19	1,996	359	1,946	147	80	810	23,800	20,663
October 26	1,962	268	1,899	170	75	821	23,256	20,943
November 2	1,880	241	1,627	169	82	856	23,483	21,403

Oregon Broiler Men Seek Legislation

EUGENE, ORE.—The president of the Oregon Broiler Growers Assn. last week made a plea for Gov. Robert D. Holmes to recommend that the special legislative session at Salem pass legislation giving the state department of agriculture authority to control labeling and grading of poultry being shipped in from out-of-state producing districts.

B. J. Rogers, Eugene, broiler association head, pointed out that Oregon's $6 million broiler industry is now facing "almost unbearable" economic pressure because of over-expansion in other areas of the country with the result Oregon growers have produced only 84½% as many fryers as in the same 1956 period while the country as a whole turned out 106½% of last year's output.

"Our neighboring states of Washington and California have both passed restrictive legislation that makes it difficult, if not impossible, for other states to ship in broilers and fryers," Mr. Rogers told Gov. Holmes. "This leaves Oregon as the only Pacific coast state without protection, and as the result this state has become the dumping grounds for all surplus and off-grade fryers produced in the heavy south and southwest production areas."

West Virginia Group Will Meet Nov. 15

BECKLEY, W.VA. — Dr. Homer Patrick, head of the poultry department at West Virginia University, Morgantown, will be one of five speakers scheduled for the annual meeting of the West Virginia Feed Dealers Assn.

The meeting will be held Nov. 15 at the Appalachian Power Co. auditorium here, and the annual banquet will be held in the evening at El Chico's.

Addresses at the meeting will be concerned with nutrition, the poultry industry, rural development projects and feed control. Speakers other than Dr. Patrick are W. D. Tuckwiller, Lewisburg, president of the West Virginia Poultry Assn.; O. C. Hutchinson, Beckley, poultry coordinator for the rural development commission; Marvin Snyder, Charleston, chief chemist of the West Virginia Department of Agriculture, and John T. Johnson, West Virginia Commissioner of Agriculture.

The program opens at 11 a.m. with a meeting of the board of directors. The annual business meeting will be held in the afternoon.

A highlight of the evening banquet will be the presentation of the AFMA film, "Old MacDonald."

Honeggers' & Co. Buys Business of Firm At Mansfield, Ohio

FAIRBURY, ILL. — Honeggers' & Co., Inc., Fairbury, has announced the purchase of the business of Honegger-Hanley Mills, Inc., Mansfield, Ohio.

The purchase did not include physical feed manufacturing facilities, and officials of Honeggers say that they will not use the Mansfield manufacturing plant in their operation. However, some warehouse facilities at the Mansfield plant will be rented for warehousing feed for the company's nearby truck-lot dealers.

Feed manufacturing for the area previously serviced by the Honegger-Hanley Mills, Inc., will be accomplished at the company's push-button mill in Fairbury, or at some other plant.

Honeggers' feeds have been manufactured by the Mansfield firm for the past 10 years under a franchise arrangement with the Illinois company.

J. O. Hanley has announced that he is retiring from the feed business.

Flour Mill Purchased For Feed Manufacture

LINDSBORG, KANSAS — A flour mill that has not been in operation for the past three years will be developed into a modern feed mill under plans announced recently by S. Dean Evans, Sr., partner in the Evans Grain Co., Salina, Kansas.

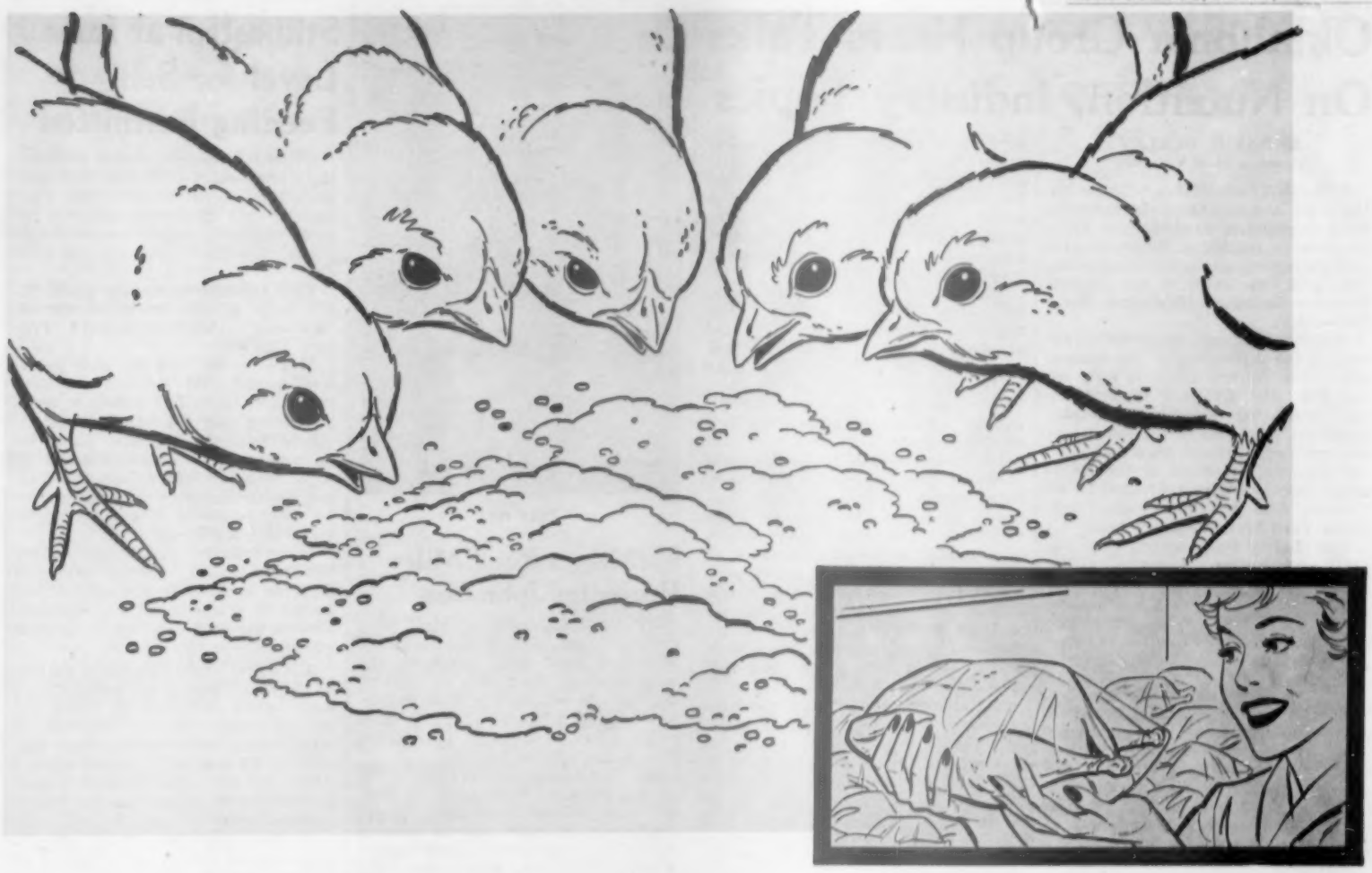
Mr. Evans is president of a new company, the Lindsborg Grain Co., which has purchased the Lindsborg mill and elevator properties of the Rodney Milling Co., the sale effective Jan. 1. In addition to a feed mill, the properties will be used for grain storage and merchandising, according to present plans. Under terms of the sale, it cannot be operated as a flour mill for 10 years.

Although Rodney Milling Co. has owned the Lindsborg property for 15 years, for the past three years only the grain storage facilities had been used. Part of the mill machinery had been removed from the mill, which had a daily flour milling capacity of 3,400 sacks. Elevator storage capacity is 425,000 bu.

The newly formed corporation was capitalized at $100,000.

FIRST SON

NORFOLK, VA.—Henry Heighton, sales manager of Coronet Phosphate Co., and Mrs. Heighton announce the arrival of their first son, Henry Heighton, Jr., on Oct. 25. The Heightons also have four daughters.



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Oklahoma Group Hears Talks On Nutrition, Industry Topics

By RAY H. BURLEY
Oklahoma State University

STILLWATER, OKLA.—Topics for the ninth annual Oklahoma Formula Feed Conference ranged from sales pointers to results of livestock and poultry feeding trials. The conference was held Oct. 24-25 at the Poultry Sciences Building, Oklahoma State University.

Two hundred and seventy-five attended the dedication of the university's new poultry farm at noon on the first day. Industry speakers at the dedication were Paul Silvey, Shawnee, president of the Oklahoma Poultry Improvement Assn.; Al Bryan, Edmond, president of the Oklahoma Turkey Federation; and R. D. Calvert, Ada, president of the Oklahoma Feed Manufacturers Assn.

The poultry farm, moved from the OSU central campus to make way for an Agricultural Hall, includes five buildings totaling 25,174 sq. ft. floor space, on 29 acres. When completed, the farm will have 19 buildings totaling 51,000 sq. ft.

Turkey Nutrition

Dr. Rollin Thayer, OSU professor of poultry husbandry, introduced his talk on "Looking Ahead in Turkey Nutrition" by pointing out that the average market price of turkeys declined from 32.7¢ lb. in 1952 to 26.5¢ in 1956, and that a further decline of 2 to 4¢ is expected for 1957.

Feed costs, comprising 67.6% of the average cost of producing a market turkey, offer the best opportunity for reducing production costs and maintaining profit margins, he said. He pointed out that a reduction of ⅛ lb. of feed per pound of turkey produced means an added return of 33.6¢ per 21-lb. bird, on the basis of 1956 production costs.

Dr. Thayer described recent research at Oklahoma State University which was aimed at a reduction in the amount of feed required to produce a pound of turkey meat. An experimental ration which would permit turkeys to grow at the maximum rate permitted by their genetic potential was developed. The ration was so devised that energy content could be varied, and protein content could be varied from a low of 24% to a high of 36%. All ingredients except two were the same ones in use now.

MORE DETAILS

A more complete report, including later data, on Dr. Thayer's significant turkey feeding research will appear in an article by Dr. Thayer and Kenneth E. Dunkelgod of OSU in the Nov. 23 issue of Feedstuffs.

Seven feeding trials involving 3,000 poults were conducted. Toms and hens averaged 1 lb. of turkey produced on less than a pound of feed, during their first two weeks. They averaged 1 lb. of turkey per 1.08 lb. of feed during their first four weeks. At eight weeks they averaged 5.3 lb. and had required 1.35 lb. of feed per pound of turkey produced. "Control" birds, fed on a standard turkey starter containing 28% protein, averaged 4.54 lb. and had required 1.81 lb. of feed per pound of turkey at eight weeks.

"The complete data indicated that there was a plateau in growth at a protein level of 33%," Dr. Thayer said. "The efficiency with which feed was converted continued to improve at the 36% protein level. A calorie-protein ratio of 46 to 1 in terms of metabolizable energy was required for most efficient use of the energy in the feed. This represents a calorie-protein ratio in terms of productive energy of approximately 30 to 1. This is the calorie-protein ratio which is recommended at the present time for use in turkey starter rations. However, it is apparent that a calorie-protein ratio in terms of metabolizable energy of 55 to 1 was required for the most efficient conversion of protein. This may mean that higher energy levels will be required in turkey starters for the most efficient conversion of all nutrients.

"Preliminary studies with amino acid supplementation indicated that arginine may be limiting amino acid at the 33% protein level, and that arginine, lysine and tryptophan may be limiting at the 36% protein level. Further study will be required before specific amino acid deficiencies can be determined."

Dr. Thayer said that a feeding trial in which Broad White turkeys were being grown to market weight was begun prior to the Formula Feed Conference. The advantages in weight and in feed conversion, in favor of the experimental ration, which were observed at the end of the eighth week were maintained during the remainder of the growing period. At 16 weeks of age, toms averaging 12.9 lb. had required 1.91 lb. of feed per pound of turkey produced. Hens averaging approximately 9.7 lb. had been produced on 1.95 lb. of feed per pound of turkey.

The experimental rations used in the study are not adaptable to commercial feeding operations, Dr. Thayer pointed out. Work is under way to get the necessary basic information that will be required for practical application.

Poultry Promotion

Lloyd H. Geil, general manager for the Poultry and Egg National Board, Chicago, named the 43 million youngsters in school as the first of several markets that should be cultivated for more sales and profits. He stated that the surface had not been scratched in supplying teachers with educational materials concerning the food value of poultry meat and eggs and their important role in the diet. Mr. Geil said that the 18 million teen-agers in and out of school constitute the fastest-growing market in the U.S. The 9 million teen-age girls extend their influence over 25 million people, representing about 5 million families whose earnings and spending are at a peak. These teen-age girls help their mothers run the house and make decisions as to what the family will eat.

The third market is the people who consume 76 million meals a day in restaurants. Restaurant managers should be encouraged, and assisted, in ways to serve more chicken, turkeys and eggs in a most appetizing way. Fourth are the 11 million workers in industrial plants who eat meals in plant cafeterias and restaurants.

(Turn to OKLAHOMA, page 106)

John Bex

McMillen Feed Mills Promotes John Bex

FT. WAYNE, IND.—Central Soya Company, Inc., and its feed division, McMillen Feed Mills announce the promotion of John Bex to eastern district sales manager with headquarters at the company plant in Harrisburg, Pa., according to Dr. Charles W. Crowe, vice president.

Mr. Bex joined Central Soya in the special products department in 1946. He was promoted to farm supply supervisor in 1948 and to general manager of the farm supply department in 1952. Since September, 1955, he has been associated with the company's special meal sales department.

Mr. Bex and family will make their home in Camp Hill, Pa.

Feed Control Group To Meet Oct. 14-16

WASHINGTON—The dates for the 1958 meeting of the Association of American Feed Control Officials have been announced by L. E. Bopst, secretary. They are: Oct. 14—states relations committee meeting; Oct. 15—9 a.m., advance registration, and 1 p.m., main meeting; Oct. 16—9 a.m., main meeting continues with adjournment about noon. The meeting will be at the Shoreham Hotel, Washington.

Represents United Salt

ATLANTA, GA. — Heard-Kinard-Smith, Inc., broker in grain, grain products and feed ingredients, announces it has acquired exclusive representation from United Salt Corp., Houston, Texas, on the sale of feed grade salt to feed manufacturers and wholesale distributors in the north Georgia area.

John Harman — Urban T. Donovan — Robert F. Klusmeyer — Elvin M. Hanson

HESS & CLARK APPOINTMENTS—A change in territory for two Hess & Clark sales representatives and the addition of two new men have been announced by the Ashland, Ohio, drug firm. John F. Harman, previously representative for feed medication products in eastern Pennsylvania and the state of New Jersey, is now in charge of industrial feed medication product sales in the Northeast. Urban T. Donovan, formerly animal health products salesman for northern and central Illinois, is now selling both animal health products and feed medication products in the northern one-third of Illinois. Both have been with the firm about a year and a half. The new sales representatives are Robert F. Klusmeyer, named for southwestern Illinois, and Elvin M. Hanson, for northern and western Illinois. Both will sell animal health products and feed medications. Mr. Hanson replaces Frank Smith, who has resigned.

Stilbestrol at Low Level for Self Feeding Permitted

INDIANAPOLIS — Feeds containing a low level of stilbestrol may now be self-fed to cattle and sheep. Previously, only controlled amounts of feed containing higher levels of the growth stimulant were allowed each day.

This announcement was made by Eli Lilly & Co., manufacturer of "Stilbosol" (Diethylstilbestrol Premix, Lilly).

The company said the new provision means that farmers can give cattle and sheep free access to feeds containing only 0.4 milligram of diethylstilbestrol per pound. Based on an average daily consumption of 25 lb. of feed per beef animal and 5 lb. per sheep, this gives the recommended daily levels of 10 mg. for cattle and 2 mg. for sheep.

In announcing this latest use for "Stilbosol," G. L. Varnes, executive director of the Lilly agricultural and industrial products division, summarized all the ways in which the growth stimulant can now be fed.

1. Cattle: Feeds containing 0.4 mg. of diethylstilbestrol per pound can be kept before cattle at all times. Or, as previously, varying amounts of supplements and complete feeds containing 0.5 mg. to 10 mg. of diethylstilbestrol per pound can be fed daily, provided each animal gets the recommended level.

2. Creep-fed calves: Feeds containing levels of 0.4 mg. to 1.5 mg. of diethylstilbestrol per pound are allowed.

3. Sheep: Feeds containing 0.4 mg. of diethylstilbestrol per pound can be kept before sheep at all times. Varying amounts of feeds containing 0.5 mg. to 2.0 mg. of diethylstilbestrol per pound can be fed daily, provided each animal gets the recommended level.

Industrial Molasses Named Sales Agent

NEW YORK — The U.S. Rubber Co. has announced the appointment of the Industrial Molasses Corp., Leonia, N.J., as a dealer and leasing agent for the rubber company's new rubber-fabric "Sealdtank" containers in several fields (see Feedstuffs, Sept. 7, page 8).

Industrial Molasses will market Sealdtanks in handling and storing molasses, tallow, vegetable oils, fish solubles and oils, and feeds and feed ingredients. The company also will lease the containers, which resemble over-grown toothpaste tubes, in these fields.

The collapsible containers, made of synthetic rubber and rayon cord and unveiled recently, are made in a variety of sizes. Officials said that 30-ft., 3,200-gal. model is the most popular in the trucking industry. Larger models are made for use on railroad cars and barges and for industrial plant storage.

Industrial Molasses maintains storage terminals in Albany, Buffalo, Chicago, St. Louis, New Orleans, Denver, St. Paul, Peoria, Superior, Wis., and Muscatine, Iowa. Sales and leasing operations will also be carried on from its executive offices in Leonia.

CORRECTION

The Nov. 2 issue of Feedstuffs included pictures of some of the exhibits at the recent Nebraska Feed & Nutrition Conference at the University of Nebraska. In the captions accompanying the pictures, the firm preparing a quality control exhibit was incorrectly identified. The display, entitled "Microscopical Analysis in Product Control," was prepared by the O. A. Cooper Co., Humboldt, Neb. A. C. Koontz, Cooper's feed microscopist, gave the demonstration.

Higher Beef Prices In Next Few Years Seen by Economist

URBANA, ILL.—Prices of fed cattle ranged from $2 to $3 higher during the first seven months of this year than last year, but most of the improvement in recent prices has been on lower grades of cattle, according to a University of Illinois agricultural economist, L. H. Simerl, in a summary of the beef situation and outlook.

Prices of choice and prime steers didn't rise to the extreme heights in September and October that they reached a year ago, he notes. But recent prices on the lower grades have been $1 to $3 higher than those of the same period a year ago.

The economist reports beef production has leveled off this year and is expected to decline slightly in 1958. Our population continues to increase nearly 2% a year. Production of pork, which competes with beef, is increasing, but market supplies will continue relatively light at least until about next October. If consumer buying power holds up, Mr. Simerl predicts, fed cattle should average $1 or so more per 100 lb. in the next 12 months than they did this past year.

Cattle on Feed: Farmers in 13 states were feeding 11% fewer cattle on Oct. 1 this year than last. The 2,222,000 head in feedlots was the smallest number for the date in three years. Much of this reduction in numbers on feed will apparently be reflected in reduced marketings of fed cattle in the next 60 days. Farmers reported that they intended to move 16% fewer cattle to market in November than last year, and 12% less in December. The smaller supplies should provide strong resistance to seasonal price declines in the next two months, Mr. Simerl feels.

Cattle Cycle: The cycle in cattle numbers appears to be definitely in the decreasing phase. Numbers climbed 25% in the eight years ended Jan. 1, 1956. But in the nearly two years since that date, they apparently have declined about 4%.

Some rebuilding of herds depleted by drouth is going on in the Southern Great Plains. However, many ranchers in this section are not financially able to rebuild rapidly. In most other areas there was no depletion and thus no need for rebuilding.

The nation's calf crop has been de-

(Turn to BEEF PRICES, page 106)

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Distributors in the Upper Midwest States for
SMALL'S DEHYDRATED ALFALFA MEAL

Robert H. Rife

RESIGNS — Robert H. Rife has resigned as eastern district sales manager for McMillen Feed Mills. He started with McMillen in 1940 as a salesman in Ohio and in 1941 became assistant territory manager at Gibson City, Ill. Later he became territory manager in southern and northern Ohio areas and in 1947 was promoted to district sales manager in the East with offices at Camp Hill, Pa. The district comprises Pennsylvania, Delaware, Virginia, New Jersey and New England states. Mr. Rife has not announced his plans for the future.

Cincinnati Feed Club In Membership Drive

CINCINNATI—The current membership drive of the Cincinnati Feed Club will get top attention at the monthly dinner meeting Nov. 11 in Shuller's Wigwam Restaurant.

A number of non-members in the area will be guests, and present members will briefly discuss the products in which their firms specialize. There also will be a display of sales literature of present member companies, and the program will conclude with a showing of the new film, "Old MacDonald," produced by the American Feed Manufacturers Assn.

Manager Named for New Mill in Iowa

KANSAS CITY — Carl Greenberg, an employee of the fertilizer department of Consumers Cooperative Assn. for the past four years, has been transferred to the feed department.

He began work as manager of the association's new feed mill in Ida Grove, Iowa, Nov. 1. The mill will be in operation about Jan. 1.

Nutrition Research Outlined at First Alabama Conference

AUBURN, ALA.—Continued expansion of the rapidly developing livestock industry of the Southeast will come through the economies gained in nutrition research, speakers at the Alabama Nutrition Conference said here.

Approximately 80 feed industry representatives were present at the meeting—the first Alabama Nutrition Conference—held at Alabama Polytechnic Institute.

Dr. W. M. Warren, head of the API animal husbandry and nutrition department, said that an accelerated research program directed toward maximum utilization of roughage with proper supplements will assure continued expansion of Alabama's beef production industry.

Dr. Warren said that profitable beef cattle production depends to "a great extent on the utilization of large amounts of forage."

The two-day conference opened with a welcome address by Dr. E. V. Smith, dean and director of the School of Agriculture and Agricultural Experiment Station. Sponsors were the Alabama Feed Assn., School of Agriculture and Agricultural Experiment Station, and API Extension Service.

Dairy Studies

Dr. K. M. Autrey, head of the dairy husbandry department, said results of studies indicate that dairymen might have good success in growing heifers from six to eight months to calving age with little or no grain. However, he cautioned that the success will depend on quality and quan-

(Turn to ALABAMA, page 106)

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FALCON BRAND PULVERIZED WHITE OATS
STANDARD BRAND PULVERIZED WHITE OATS
DAIRY BRAND COARSE GROUND OATS
CRESCENT BRAND PULVERIZED OATS
CORN OATS PELLETS (Corn-Oats)
MIXERS' PULVERIZED OATS
MIXERS' COARSE GROUND WHITE OATS
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SATURDAY AFTERNOON CLOSINGS FAVORED

DENVER—A survey by the Colorado Grain, Milling & Feed Dealers Assn. shows that a majority of the group's members favor Saturday afternoon closings from Nov. 1 through April 1. A majority of the firms that completed the questionnaire already were following the Saturday afternoon closing practice during the winter months. The survey showed that 47 stores are closed Saturday afternoons, 28 are not closed, but the owners would like to close, and nine owners are not in favor of closing. The biggest obstacle to not closing, it was indicated, was that the competitors would not do so. A number of operators who had been closing their stores Saturday afternoons said that their business had not suffered from the closings, and that lower labor costs had resulted in many cases. The survey also indicated that in some communities there was lack of cooperation in talking over closings with the competitor.

Fisheries Men Discuss Buying Guide for Oils

WASHINGTON—A tentative purchasing guide for condensed fish oils was discussed by the technical committee of the industrial products division of the National Fisheries Institute, Inc., at the group's semi-annual meeting recently.

Such a guide has been requested by the Nutrition Council of the American Feed Manufacturers Assn.

The meeting was held for election of officers, a discussion of the 1958 convention program and a look at the entire subject of research projects, both collaborative and under the Fish & Wildlife Service.

During the session, members heard from several representatives of the Fish & Wildlife Service responsible for a number of the projects on fish meal and fish oil under the Saltonstall-Kennedy program.

Participating in the session were Charles Butler, chief of the technological section, Bureau of Commercial Fisheries; Dr. Hugo Nilson, Dr. Maurice Bender and Donald Snyder of the College Park laboratory, and Miss Neva Barrick of the Seattle laboratory.

Dr. Thomas L. Meade was named chairman of the committee for a term of two years. Raymond Allen was named vice president.

FIRE LEVELS ELEVATORS

ATLANTIC, IOWA—Two grain elevators owned by the Atlantic Mill & Elevator Co. were destroyed by fire recently. Damages were set at more than $100,000. The major loss was an 80-foot-high, 160 by 150 ft. storage elevator.

Broiler Price Skids 2c in Delmarva Area

SALISBURY, MD.—The big drop in broiler prices came last week in the Delmarva area. The price slid 2¢ lb.

According to the Maryland-Delaware Crop Reporting Service, the average price paid on the farm was 16.69¢ lb. compared to 18.62¢ the week earlier. However, this was slightly better than a year ago when prices averaged 16.12¢.

The low prices came despite fewer chickens going to market. Delmarva producers sent 3,040,000 broilers to market last week—3% less than the previous week and 3% below the corresponding week of last year. Marketings were 94% of the number of chicks started 10 weeks earlier. Looking at the national picture, hatcherymen in 22 reporting states placed 23,483,000 chicks last week. This was 1% more than the previous week but 10% above the corresponding week a year ago.

The hatcherymen in the 22 states also set 32,820,000 eggs in the week ending Nov. 2. This also was 1% less than the previous week but 10% above the corresponding week a year ago.

Lower broiler prices tore into the meat-feed ratio. Average prices paid for 20% broiler mash for the past two weeks have been $95.35. A pound of meat last week would buy 3.5 lb. feed. The week before it would buy 3.9 lb.

Bourbon Beef Show Prizes, Entries Up

LOUISVILLE—Cattle fattened on balanced rations containing distillers dried grains or solubles will vie for $15,000 in premiums at this year's Bourbon Beef Show Nov. 13-15 in Louisville.

A total of 1,054 entries from seven states will compete in four divisions—the Kentucky youth division, Kentucky adult division, out-of-state youth division and out-of-state adult division.

Top winners in the four divisions will compete for a $1,000 grand championship award. And another $1,000 goes to the grand champion carload of 15 head.

Entertainment awaiting the persons entering livestock in the show is lavish, the show committee has announced. Aged prime ribs will be served at a "Bourbon Beef" luncheon the first day to all entrants, and the next night Louisville's seven meat packers will play host to all the entrants, their friends and special guests at a chuck wagon dinner.

Entries this year are almost double the turnout of a year ago, and the prize money has been upped some $5,000 through cooperation from the American Angus Assn., the American Hereford Assn., and the American Shorthorn Breeders Assn.

Feedstuffs: Weighted Average Prices and Index Numbers, With Comparisons

Compiled by U.S. Department of Agriculture—Base Period 1947-49=100
(All prices of feeds and grains in dollars per ton)

	5-Year average 1951-55	Oct. 29, 1957	Nov. 5, 1957	Change from previous week	Per cent Nov. 5 is of 5-year average
OILSEED MEALS—					
Index of weighted prices	99.9	74.4	74.1	—0.3	..
ANIMAL PROTEIN FEEDS—					
Index of weighted prices	88.1	74.9	73.8	—1.1	..
GRAIN HIGH-PROTEIN FEEDS—					
Index of weighted prices	89.3	71.2	71.2	..	..
WHEAT MILLFEEDS—					
Index of weighted prices	90.4	65.0	64.7	—0.3	..
OTHER MILLFEEDS—					
Index of weighted prices	84.5	63.6	63.9	+0.3	..
ALFALFA MEAL—					
Prices at principal markets	59.75	53.90	53.60	— .30	90
Index of weighted prices	105.8	95.4	94.9	—0.5	..
MOLASSES, FEEDING—					
Prices at principal markets	27.85	29.29	28.81	— .48	103
Index of weighted prices	82.9	87.2	85.7	—1.5	..
ALL FEEDSTUFFS—					
Index of weighted prices	94.0	73.0	72.6	—0.4	..
FEED GRAINS—					
Index of weighted prices	87.7	66.8	66.2	—0.6	..

HATCHERY

(Continued from page 4)

gers to producers. Fowl typhoid, he said, is quite prevalent, but fortunately some effective treatments are on the market. Many birds in a flock which has just gotten over fowl typhoid are carriers (the disease is primarily egg-borne) and therefore the flock should not be used as a hatchery supply flock, he said.

Two or three new coccidiostats are coming out, Dr. Pomeroy said, and "while these will not be the panacea, they will be important as preventives. The sulfonamides are still the reliable flock treatments."

Dr. Pomeroy also showed slides of air sac lesions in chickens and turkeys caused by chronic respiratory disease. In one test on a turkey flock, several antibiotics were used satisfactorily to diminish the hazard of CRD transmission. Antibiotics, he explained, have been highly effective against ornithosis, and have been helpful in the control of bluecomb outbreaks.

While not spectacular, the gains made in poultry disease treatment have been steady during the past year, Dr. Pomeroy said.

Egg Law

Details of Minnesota's new egg law were explained to the delegates.

Minnesota's new egg law requires that all eggs be candled and graded; all dirty eggs are to be paid for as such; and no buffing or washing of eggs be done prior to candling or grading by the purchaser; all eggs be maintained at temperatures not to exceed 60° F.; all egg trucks be insulated; when eggs are candled and graded other than in Minnesota, this work must be done under U.S. Department of Agriculture supervision; cooling facilities be installed in all set-in operations; an annual egg inspection fee of $25 and an egg license fee of $5 be paid.

Producers' Group Urged

Minnesota egg producers were invited to a "Producers' Day" session Nov. 8 to discuss the state's new egg law and the possible formation of an organization of egg producers at county and state levels.

"We need this type of organization for the family farm flock to compete with factory type of egg production," said Mr. Baumgartner. "We need cooperation from hatcherymen, the producers and the feed industry."

A panel of poultrymen and University of Minnesota representatives discussed the quality situation in Minnesota and answered questions concerning quality production.

At the close of the discussion several persons were nominated to investigate the proposed producers' quality organization.

Retired G.L.F. Official Dies in California

BUFFALO, N.Y.—Edwin W. Stuhr, 78, a former vice president of the Cooperative G.L.F. Mills in Buffalo, died Nov. 1 at Riverside, Cal. A leader in the grain and feed trade for almost 50 years, he retired from G.L.F. in 1949.

Mr. Stuhr entered the grain business in Minneapolis in 1901. He was active in all phases of the business and became a partner of Stuhr-Seidl Co.

In 1923 he moved to Buffalo to assume direction of the Buffalo operations of the Archer-Daniels-Midland Co., and in 1937 joined G.L.F. as vice president in charge of purchasing.

Upon his retirement in 1949 he moved to California.

Mr. Stuhr was a former member of the Buffalo Corn Exchange and the Buffalo Flour Club. He is survived by his wife, Bertha Duganne Stuhr, and a son, John.

ADA Awards $5,000 To Michigan State For Alfalfa Study

KANSAS CITY — Michigan State University is the recipient of a $5,000 grant from the American Dehydrators Assn., according to an announcement made here by Joseph Chrisman, executive vice president of ADA. The grant is made in connection with dairy feeding trials using different levels and different methods of feeding dehydrated alfalfa pellets.

The studies will be carried on at MSU Kellog Farm near Battle Creek, Mich., under the direction of Dr. C. F. Huffman and Dr. C. A. Lassiter of the dairy department.

Dr. Huffman said the objectives of the project are: (1) To obtain information on the value of dehydrated alfalfa pellets as a supplement to a grass-corn silage-grain ration for milk production; (2) to determine the effect of supplementing a hay-corn silage-grain ration 30 days prior and 60 days following calving on the peak of milk production; (3) to observe the time required for cows to consume artificially-dehydrated alfalfa pellets fed with grain in a milking parlor.

This is the fifth grant-in-aid made this year by ADA to state universities and colleges. Grants were made earlier this year to Cornell University, University of Nebraska, University of California and Washington State College.

Grants to the University of Nebraska and Washington State College were made to further research studies in beef cattle nutrition. At Cornell, Dr. Fred Hill is conducting a study of the evaluation of the metabolizable energy of dehydrated alfalfa. Dr. J. H. Meyer is directing a study on the nutritive value and palatability of alfalfa at various stages of growth at the University of California, sponsored in part by the grant from ADA.

IMC Stockholders Vote To Increase Shares

NEW YORK—Stockholders of International Minerals and Chemical Corp. have voted an increase in the number of common shares from 3 million to 5 million.

Louis Ware, IMC president, told the 48th annual meeting of shareholders that the increased stock authorization was not requested for any immediate need but to make such an issue possible in event of future contingencies "such as the acquisition of desirable properties or processes."

Mr. Ware, who with several top officers outlined the company's present position and future plans, said that sales and earnings for the current fiscal year will be above 1956-57, when sales exceeded $100 million for the first time.

Arthur R. Cahill, IMC financial vice president, cited the 31% increase in share earnings last year as evidence that the company "is beginning to realize the potential earnings from its extensive expansion program over the past four or five years."

He said IMC plans expenditures of around $9 million during the current fiscal year, about $3½ million of that on a new potash mine now under construction at Esterhazy, Canada. The remainder would be spent on improvements at other IMC plants and mines.

Stockholders reelected all members of the board of directors.

A. R. Montgomery, Nutritionist, Dies

DES MOINES—Arthur R. Montgomery, 61, an employee of E. M. Peet Manufacturing Co. for 36 years and nutritionist for the firm for the past 15 years, died recently of a heart attack.

Surviving are his widow, a son, two daughters, a step-son, three brothers and two sisters.

As a trustee of Bethel College, Morton Williams helps youths help themselves.

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Town and farm people in and around Hopkinsville, Kentucky, know Mr. Williams as a good citizen. Both his business hours and his non-business hours are *service-minded.*

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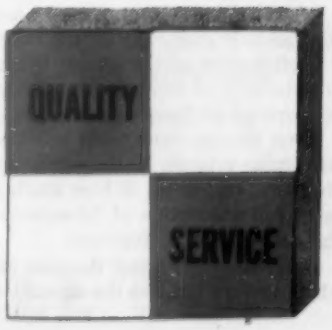
But, equally important, Morton Williams contributes heavily to community life and welfare. He is a deacon, trustee and Sunday school superintendent in his church, director of his bank, a past president of the local Chamber of Commerce, a director of Christian County Livestock Improvement Association, a trustee of Bethel College, and an active member of the County Farm Bureau and the local Rotary club.

True, Morton Williams' occupation is "feed dealer" . . . but his *profession* is "service." It is men like Morton Williams who bring honor and success to this business of building a better more profitable animal agriculture.



PURINA...YOUR PARTNER IN SERVING ANIMAL AGRICULTURE

California Conference Has Turnout of 400

By EMERY A. JOHNSON
California Poultry Improvement Assn.

FRESNO, CAL.—Four hundred feed manufacturers, field representatives, poultrymen and cattlemen gathered at Fresno Oct. 21-22 for the annual Animal Industry Conference sponsored jointly by the University of California and the California Hay, Grain & Feed Dealers Assn.

Morning and afternoon sessions were scheduled for each day, and both days included panel discussions, one for those interested in poultry and turkeys and the other for raisers of large animals, along with their feed suppliers.

The banquet period featured a non-industry speaker, Dr. Daniel G. Aldrich, chairman of the department of soils and plant nutrition, University of California, who interested the audience with an illustrated presentation, "California Soils and the Future."

Early in the program, Dr. N. L. Jacobson, Iowa State College, described the changes which have occurred in the dairy industry in the U.S., and said that "the nutrition of dairy cattle is becoming increasingly complex due in large measure to the need for minimizing the cost of calf raising without reducing the quality of the animals as herd replacements and to the need for greater efficiency of production by the lactating cow.

"At birth," he continued, "the calf is unable to eat much dry feed because its digestive tract is suited primarily to the consumption of liquids." The relative size of the various compartments of the stomach at birth, at four months (if consumption of dry feeds has been encouraged), and at maturity is shown in Table 1.

"It is possible," Dr. Jacobson pointed out, "to develop the digestive capacities of the calf so that it is able to get along exclusively on dry feeds after six to eight weeks of age. This involves programs commonly referred to as limited whole milk or milk replacer systems, but if the change from liquid to dry feeds is to be made quickly, special precautions must be taken to provide for the needs of the calf."

Dr. Jacobson emphasized that colostrum is high in vitamins and in the "immune" globulin fraction of protein which provides the calf with a certain degree of resistance to disease, and therefore the feeding of colostrum for at least the first day is an important step in any system of calf raising. He mentioned that milk replacers must contain liberal amounts of vitamin A, and some vitamin and trace minerals, and he recommended the addition of at least 10% fat.

Starter Rations

"If liquid feeds are to be removed from the diet by eight weeks or earlier, a high quality calf starter must be fed at an early age. The starter should be sufficiently high in protein (at least 16%), low in fiber and highly palatable. A mixture which is rather coarse in texture, free from dust and which does not separate into coarse and fine ingredients is preferred. If the grains are coarsely ground, cracked or crimped, and if liquid molasses is added, the above criteria usually can be met." The mixture used at Iowa State College was suggested as being very satisfactory:

	%
Ground corn	20
Ground oats	22
Soybean meal	20
Wheat bran	10
Distillers dried solubles	15
Liquid molasses	10
Dicalcium phosphate	2
Trace mineral salt	1

He also recommended with limited milk and milk replacer systems that a liberal supply of high quality hay should be made available by the time the calf is 10 days of age.

In the discussion concerning feed additives he observed that antibiotic supplements in calf rations result in increased rate of growth, increased appetite and sometimes a reduction in diarrhea. Penicillin is not recommended, but Terramycin and Aureomycin have given good results, he said. Little work has been done on arsenicals and detergents in calf diets.

In dairy cows, a desire for higher and more efficient production has called attention to a number of possible additives. Thyroprotein, when fed under proper conditions, increases milk production in moderate milkers. To prevent weight loss, thyroprotein feeding must be accompanied by a substantial increase in feed intake. Sodium propionate is used in the treatment of ketosis, and the incidence of milk fever is lowered by altering the calcium-phosphorus ratio in the diet and by feeding massive doses of vitamin D. Certain detergents will reduce bloat, as will a small amount of oil added to the ration or sprayed on the pasture.

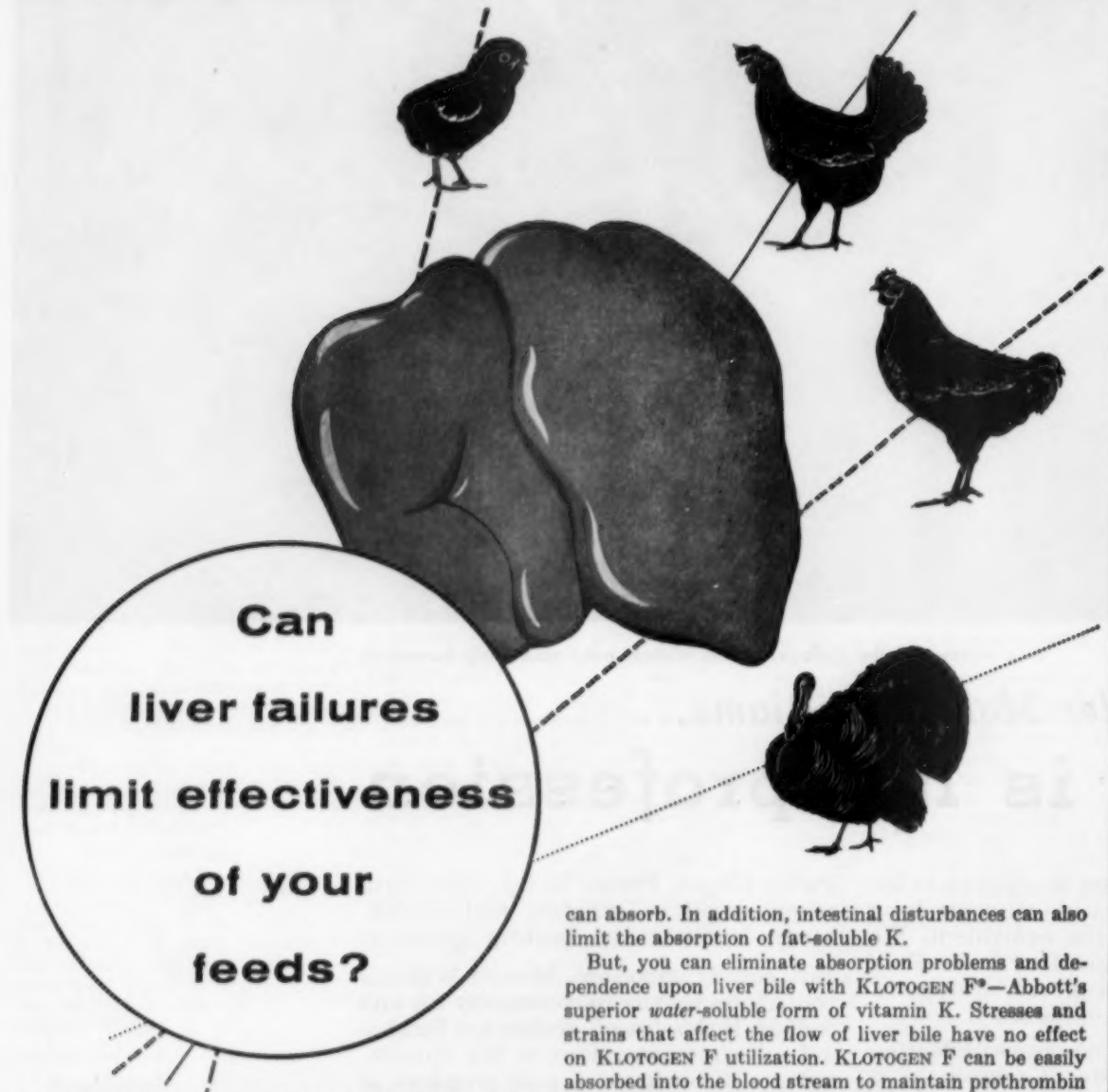
Dr. Jacobson said that forage is the basic feed in the ration of the dairy cow and consequently the production and efficient use of high quality forage is a most important area of research. Some work has been completed on the use of low quality forages for dairy cows, but it is not suggested that such feeding programs are equivalent to those employing good quality forage.

Of late there has been an interest in establishing more clearly the energy requirements of dairy animals and the comparative effects of various feeds and feed combinations on milk production and milk composition. Many of these investigations have not progressed very far, but it is already clear that a very high level of energy in the young may not be economical and may actually be detrimental in later life.

Chicks grow faster when fed a ra-

TABLE 1. Relative Sizes of Compartments of the Stomach at Various Ages

	Birth %	4 Mos. %	Maturity %
Rumen (pouch)	25	75	80
Reticulum	5	5	5
Omasum	10	9	7
Abomasum (true stomach)	60	11	8



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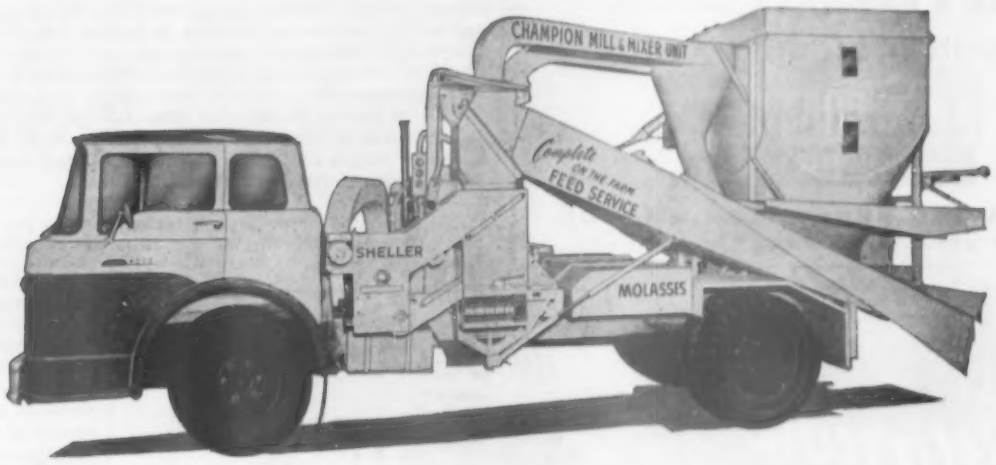

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Dr. N. L. Jacobson

Dr. Leo S. Jensen

Dr. T. B. Keith

CALIFORNIA CONFERENCE SPEAKERS—Poultry and turkey nutrition and health and recent research in feeding and health of large animals were analyzed by college and industry speakers at the California Animal Industry Conference held recently at Fresno. Shown here are three of the speakers. Dr. N. L. Jacobson, Iowa State College, spoke on trends in dairy cattle nutrition, Dr. Leo S. Jensen, Washington State College, on pelleting poultry feeds and on the nutrition of breeding turkeys, and Dr. T. B. Keith discussed the protein needs of steers fed different roughages and combinations. More than 400 persons turned out for the meeting.

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tion in pelleted form as contrasted to mash form, according to Dr. Leo Jensen, Washington State College, and some of the extra growth response continues when the pellets are ground to a consistency similar to the original mash. (See Table 2.)

To find an explanation for the growth promoting properties of pelleted feeds, Dr. Jensen pelleted the individual ingredients of a chick ration, reground these, and included them in a diet containing other ingredients which had not been pelleted. The pelleting of corn by itself, regrinding it and including it in a ration, usually gave a growth response, whereas the pelleting of other individual feedstuffs failed to support extra weight gains. From these studies it was concluded that the pelleting response is made up of two effects, one physical and one chemical, the first being of a somewhat larger magnitude than the second. A possible explanation for the chemical effect is that the pelleting process destroys certain growth inhibitors in corn and perhaps in other cereal grains.

Dr. Jensen went on to say that in some of the experiments conducted with pelleted reground corn, little or no growth response was observed, and it was considered that variations in grain samples may have accounted for some of the differences. Further experimentation included nine samples of corn grown in different parts of the U.S., and it was found that two gave no response, and two gave responses of 11% and 14% from pelleting. (See Table 3.)

The sample identified in Table 3 as Midwest (WSC) is unknown as to

TABLE 2. Influence of Pelleting on Growth of Broilers

Treatment	Ave. wt. 9 wk.	Feed per lb. gain
Mash	2.29	2.82
Pellets	2.65	2.30
Ground pellets	2.52	2.72

TABLE 3. Effect of Ground Pelleted Rations Containing Various Corn Samples on the Performance of Chicks

Source of corn	Av. wt. at 4 wk. Mash grms.	Ground pellets grms.	% Response
Washington A	346	339	— 2.0
Iowa	341	343	+ 0.6
California	340	350	+ 3.0
Minnesota A	336	352	+ 4.8
Minnesota B	351	372	+ 6.0
Washington B	340	361	+ 6.0
Midwest (WSC)	336	373	+11.0
Nebraska	325	370	+14.0

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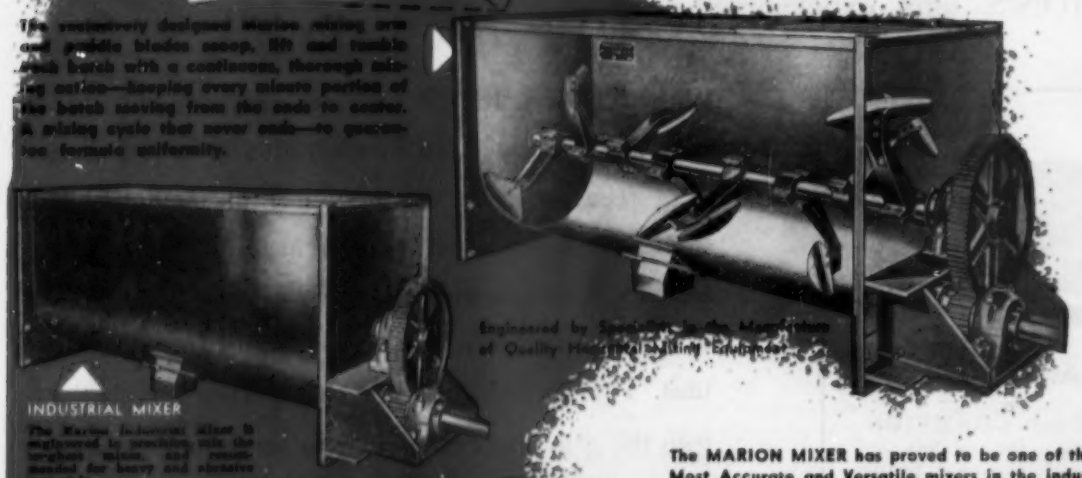

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state origin, but is the corn used in the first trials showing that pelleting results in accelerated growth rate.

Effect of Grind

"Does fineness of grind affect the growth promoting properties of grain?" Dr. Jensen asked. He proceeded to describe experiments which were conducted to compare the effect of pelleting and regrinding corn that was passed once through a hammermill with a ¼-in. screen with corn that was passed twice through a hammermill with a ⅛-in. screen. A marked response was obtained by feeding the ground pelleted corn with the coarser grind, but no response was noted with the finely ground grain. (See Table 4.)

"Perhaps this can be explained by the generation of enough heat and pressure during the fine grinding process to bring about a chemical change similar to that which occurs during pelleting," Dr. Jensen remarked.

Much of Dr. Jensen's experimental work on pelleting had been done with

TABLE 4. Effect of Fineness of Grind of Corn on Pelleting Response With Chicks

Treatment	Ave. wt. at 4 wk. Exp. 1 grms.	Exp. 2 grms.
Regular ground corn ..	363	359
Regular ground pelleted corn	406	391
Finely ground corn	394	378
Finely ground pelleted corn	388	378

rations containing 2½% added fat or less, so a study was initiated to determine if responses to pelleting could be obtained with high-fat diets. With 6% fat in the feed, a marked response to pelleting was still observed whether the fat was added before or after the pelleting process.

At a 10% fat level, the growth response to pelleting was less than half that obtained with a ration having no supplementary fat.

"It is well known that pellets made from rations containing high levels of fat are extremely soft," Dr. Jensen explained, "and with minor handling will crumble and form considerable fines."

He went on to question if it would be possible to obtain the usual pelleting response if high fat pellets could be made as hard as low fat pellets.

Using skim milk as an ingredient to harden pellets, he found that no greater improvement in growth was obtained. The skim milk, however, was not entirely successful in counteracting the softening effect of the fat.

Energy Requirements

Dr. C. R. Grau, University of California, presenting the latest information concerning the energy requirements of poultry, said that "the energy need is probably related in one way or another to the requirements for all other nutrients, but its most important relationship is with protein and its constituent amino acids."

It was pointed out that the animal responds to variation in energy content of the diet and that the varying of the voluntary food intake is the key to the relationship of energy to other nutrients.

"To be specific," Dr. Grau explained, "as the energy content of the diet is increased, food intake decreases. This decreased amount of food must contain adequate levels of protein, minerals and other items, and must therefore be more concentrated in these nutrients. A protein level of 18% in the chick diet may be ade-

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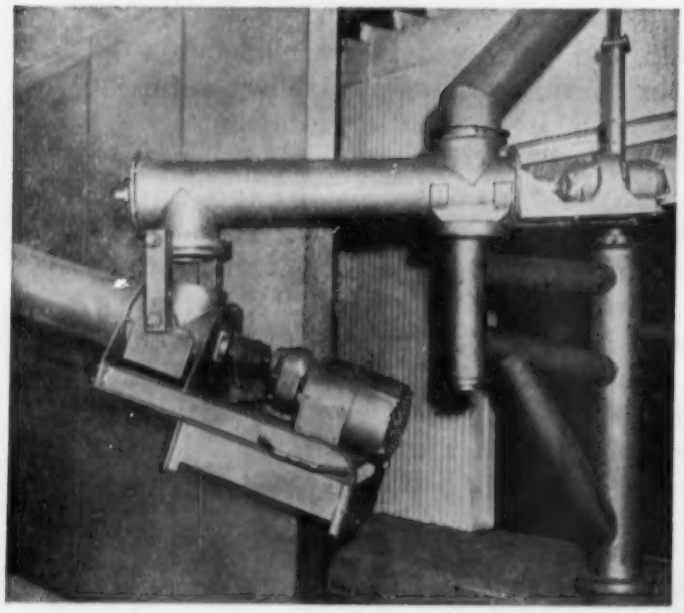

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quate for a low-energy mixture, but more than 22% may be required with a high-energy mixture."

Dr. Grau pointed out that the energy available to the bird is an important regulator of growth, egg production and carcass composition, but unlike most other nutrients, the energy content of the feed may vary over fairly wide limits without affecting the total yield of eggs or meat. The efficiency of food utilization is greatly affected by the available energy, however, and this is the basis for proper comparison of diets or feedstuffs as energy sources.

Table 5 shows several interesting points, according to Dr. Grau. Within breeds, a 15% difference in metabolizable energy in the diet did not affect production, but markedly affected food intake and efficiency of utilization. The differences between breeds are more marked, especially in efficiency, but this is explained by the two major factors of body size and rate of production. Larger birds

TABLE 5

Breed	Met. energy per lb. calories	Egg production %	Feed per bird lb.	Feed per doz. eggs lb.
New Hampshires	1167	56.2	94	7.2
	1341	57.0	84	6.3
White Leghorns	1167	68.6	76	4.8
	1341	68.4	68	4.3

eat more feed and poorer producers are less efficient.

Carcass composition is another aspect of energy utilization. In general, increasing the energy level of the diet will increase the body fat content, while increasing the protein level will decrease fat. The poultry producer and marketer must decide what kind of carcass is desired, and what it is worth to achieve a particular product.

"Given these criteria," Dr. Grau said, "nutritionists and physiologists can probably produce the desired carcass."

Metabolizable Energy

He continued: "There is little doubt now that the best measure of energy values of feedstuffs is metabolizable energy, which is the total food energy less the energy of the droppings." The data in Table 6 were presented by the speaker and calculated by Hill of Cornell.

While these data are valuable for practical formulation, Dr. Grau said, the "most important final criterion for evaluation of energy and other nutrient sources is that of total return per farm. Efficiency of individual nutrients, or total feed per pound gain, or other similar measures, may give a misleading idea of efficiency. Even cost per pound of gain or per dozen eggs produced may be unsatisfactory unless maximum gains or egg production have been achieved, and total production per farm unit is high."

Stress and Vitamin Needs

In defining the term stress, R. L. Atkinson of Texas explained that "stress is anything which tends to upset the state of equilibrium of an organism, especially insofar as its metabolism is concerned." He listed a number of symptoms of stress, which include an increased breakdown of body protein and increased excretion of body minerals such as potassium, calcium and phosphorus.

Symptoms of stress can be produced either experimentally or by natural conditions. The first includes

(Turn to CALIFORNIA, page 94)

TABLE 6. Metabolizable Energy Values of Common Feedstuffs for Chickens

	Average cal./lb.
Corn	1600
Hominy feed	1320
Milo	1500
Wheat	1520
Wheat red dog	1270
Wheat flour midds.	1220
Wheat standard midds.	840
Wheat bran	540
Oats	1210
Barley	1310
Molasses (blackstrap)	910
Soybean meal (44%)	1030
Soybean meal (50%)	1110
Meat scraps	910
Fish meal (menhaden)	990
Corn distillers solubles	1300
Dried whey	850
Alfalfa meal	640
Stabilized tallow	3300
Lard	3960

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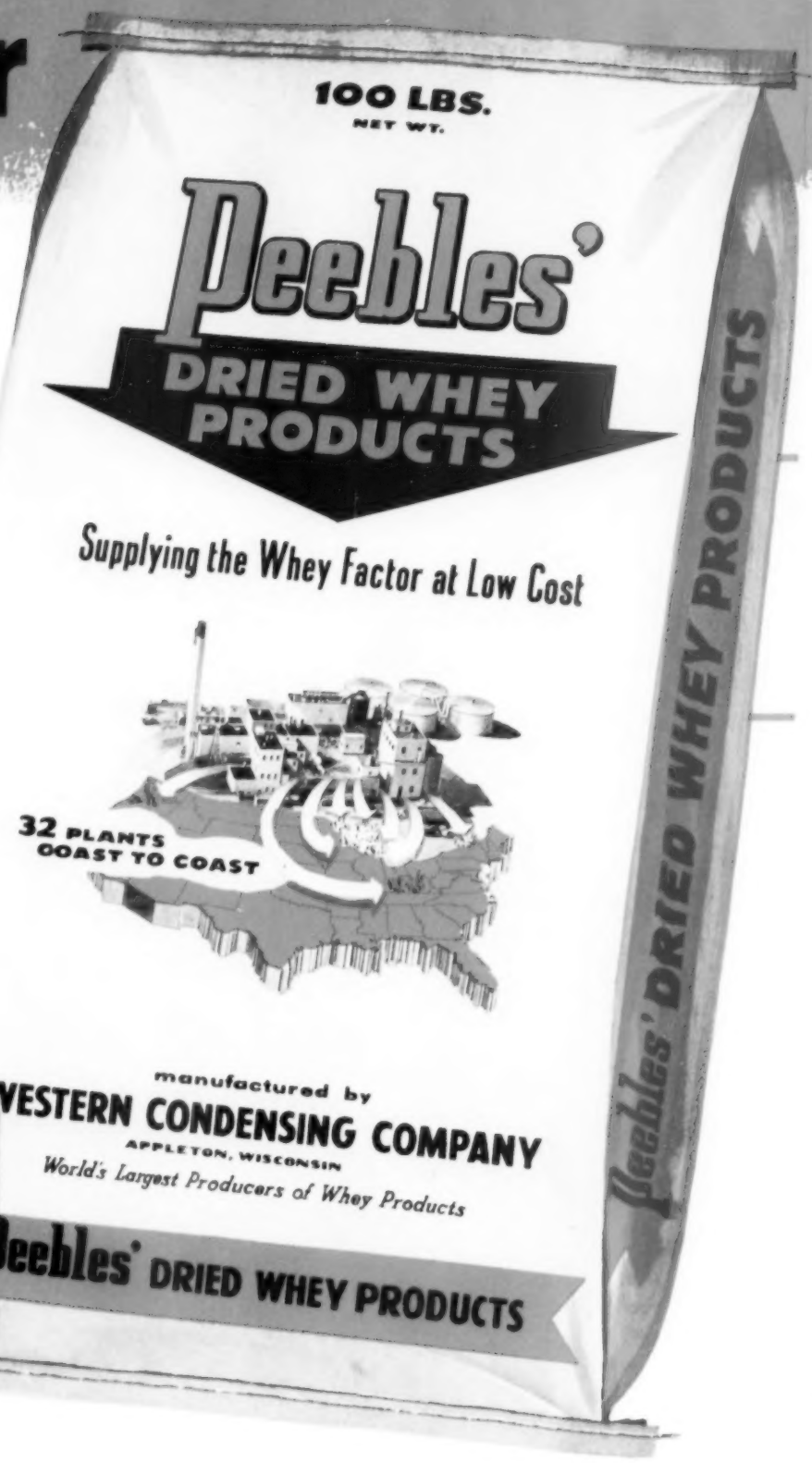

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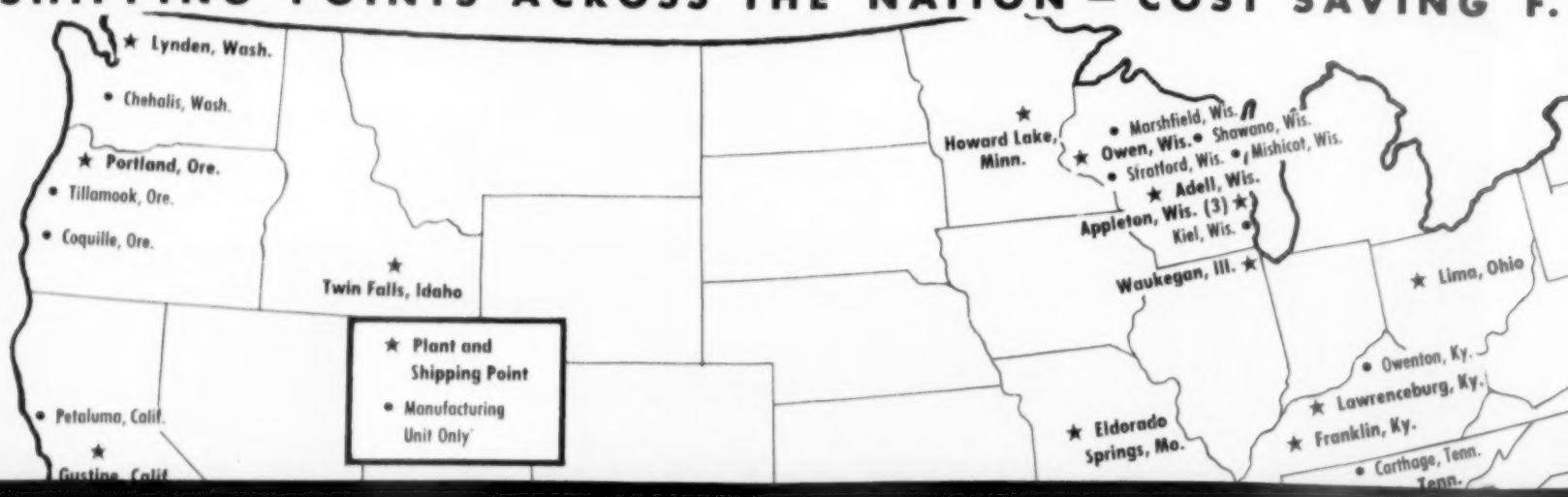

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BROILER FEEDS AND OTHER POULTRY RATIONS. M-N-C for better poultry feeds is so different that it has no real competitor. It's a partly delactosed, concentrated whey product that contains 50% more non-lactose nutrients than whole dried whey. M-N-C is the best known source of the *organic* "whey factor" and also appears to be the finest source of the recently reported *inorganic* "ash factor." The concentration of these factors in M-N-C results in better growth and more efficient feed conversion than is possible with regular whey.

Just 2% Peebles' M-N-C supplies as much whey factor as 3% whole dried whey. Gives broiler feeds and chick starters the fortification known to produce maximum results. M-N-C supplies this nutritional wallop at big savings in formula cost over straight dried whey because it is used at considerably lower levels. This lower level is also of considerable importance in high energy broiler feeds since it permits the use of additional amounts of high energy ingredients.

M-N-C is also best suited for swine growing rations where the unidentified growth factor is of prime importance.

PIG STARTERS, PRE-STARTERS AND MILK REPLACERS. Leading college authorities on animal nutrition cite *lactose* as a most important growth element for pigs and calves. Research has shown that lactose is the carbohydrate of choice for these animals since it is utilized more efficiently than others.

Peebles' WAY-SWEET is a concentrated source of high-quality lactose. It contains 80% lactose — an unusually high level of this health-building milk sugar. Rations fortified with WAY-SWEET have proved highly effective in speeding growth of young animals . . . at a cost well below that of other lactose sources, such as skimmed milk. WAY-SWEET is ideal for poultry conditioning feeds, as well.

GENERAL FORMULATION. Peebles' LACTO-G is a pure, spray-dried whey product. It fully meets the requirements for an all-around feed component to step up the effectiveness of calf, pig and poultry feeds. LACTO-G is a fine source of the "whey factor" and of lactose in situations where only one type of whey product can be used.

DOG FOODS, FOX AND MINK RATIONS. Peebles' M-N-C is a most economical source of important milk nutrients required in these products. M-N-C effectively replaces skimmed milk because it contains a greater concentration of B-complex vitamins and unidentified factors . . . and the cost is considerably under other milk sources.

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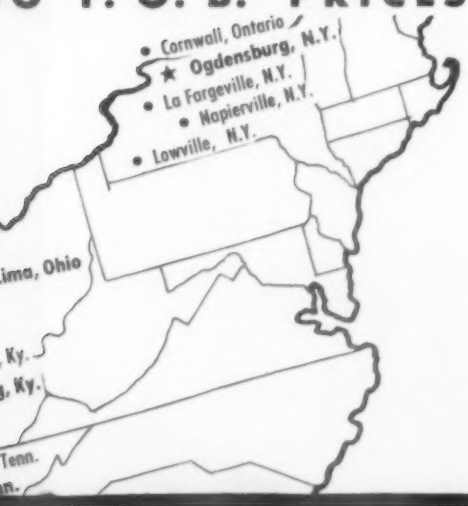

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Cornell Conference

Researchers Report on Feedstuffs Energy Values, Nutrient Requirements of Poultry

By ROGER S. BERGLUND
Feedstuffs Managing Editor

BUFFALO — The space scientists and their electronic brains are doing some pretty sharp computing these days. But if any feed man wondered whether poultry nutrition would become a more and more exact science, he could cease wondering after hearing some of the research reports presented at the recent Cornell Nutrition Conference.

While Sputnik was flying overhead, Cornell poultry scientists speaking at the conference were going about the down-to-earth business of adding more information to the continually increasing store of knowledge about nutrient requirements and feed formulation for poultry.

The large group of industry men on hand in the Statler Hotel heard reports on such things as metabolizable energy values of feedstuffs and their use in feed formulation, the requirement of chicks for methionine and cystine and vitamin A requirements of poultry.

They also heard a review of the extensive research which has been conducted on the values of antibiotics and other feed additives in poultry nutrition. And tranquilizers—which, Sputnik or no Sputnik, have found widespread use among harried men and women and may find use in beef cattle and other species—also received attention (in this case, in the rearing of game birds, which, like many humans, seem to need calming down when exposed to the trials and tribulations of so-called civilization).

Following are summaries of several of the papers on poultry nutrition which were presented at the conference:

METABOLIZABLE ENERGY VALUES OF FEEDSTUFFS, F. W. Hill and Ruth Renner — Extensive studies have been and are being conducted at Cornell on determination of energy values of purified nutritents and practical feedstuffs. Metabolizable energy—which represents the difference between total food energy and the energy of the undigested residues and urinary wastes excreted by the animal—is the measure used in our laboratory. (A previous paper by Dr. Hill on metabolizable energy appeared in the Oct. 5 issue of Feedstuffs, and not all of his Cornell conference remarks will be reviewed here.)

Metabolizable energy has been found to have these characteristics: (1) It is a more precise measure than productive energy values currently in wide use. (2) The values of purified nutrients agree well with nutritional theory, showing essentially complete utilization of sugars and zero utilization of cellulose. (3) Determination of metabolizable energy value is not materially influenced by level of food intake, rate of growth, nutrient balance or estrogen treatment, and age is not usually a factor. (4) It has been found to be a highly precise measure of the metabolically useful energy of rations for growth.

Summarized in Table 1 are metabolizable energy values of common feedstuffs determined in our research. For materials of relatively uniform compositions, such as grains and well standardized by-products, an average value is sufficient for practical feed formulation. For other ingredients, an average value is not a very useful statistic because of wide variations in composition between samples. Experiments with hominy feed showed the effect of composition, with a wide range in energy values among samples. However, it was shown that the true energy value of a given sample could be estimated reasonably well from a knowledge of its composition in relation to samples of known energy value. Ultimately, it will be desirable to determine such relationships between composition differences and energy value for many common feedstuffs because the factors relating energy values to composition of one feedstuff won't necessarily be applicable to another.

Although age has not been found to affect metabolizable energy determination generally, there is an exception with fat. It was found in one experiment that corn oil and lard were well utilized by chicks of all ages, while utilization of tallow improved with age, although at no time did its utilization approach that of the other fats.

Formulating Rations: Further work is needed, but sufficient data are available on metabolizable energy values to permit their use as a guide in formulation. One such use is to evaluate price relationships in order to formulate rations for least-cost production. Methods of computing comparative values of ingredients based on productive energy, protein and other nutrients have been described by Bird and Combs and Romoser. The comparative evaluations are made by using corn and soybean meal as reference materials and computing values of energy and protein at various prices of these two ingredients, taking into account the value of other nutrients they contain.

The use of metabolizable energy data to derive estimated nutrient values for ingredients is shown in Tables 2-4. Tables 2 and 3 contain computed values of crude protein and metabolizable energy at various corn and soy prices. In Table 4 are equations

(Turn to POULTRY on page 23)

TABLE 1—Metabolizable Energy Values of Common Feedstuffs for Chickens

Feedstuffs:	Metabolizable energy Average Cal./lb.	Range Cal./lb.
Corn	1600	1550-1670
Hominy feed	1320	1190-1530
Milo	1500	
Wheat	1520	1480-1570
Wheat red dog	1270	
Wheat flour middlings	1220	
Wheat standard middlings	840	
Wheat bran	540	
Oats	1210	1130-1290
Barley	1310	1260-1400
Rye (Tetrapetkus)	1330	
Molasses (Blackstrap)	910	
Soybean oil meal (44%)	1040	970-1110
Soybean oil meal (50%)	1120	990-1160
Meat scrap (50 to 55%)	910	830-1050
Fish meal (Menhaden)	990	860-1190
Corn distillers solubles	1300	
Dried whey	850	810- 860
Alfalfa meal	640	530- 880
Stabilized tallow	330	
Lard	3960	

The data have been calculated to an air-dry basis assuming 10% moisture for all ingredients except corn (15%), molasses (20%), whey (5%), meat scrap and fish meal (7%) and fats (moisture-free). The range of determined values as well as the average is shown for all materials represented by two or more samples.

• • •

Scientists Discuss Feeding for Leaner Meat

BUFFALO — With the increased emphasis that has been put on lower-fat diets for humans, the recent Cornell Nutrition Conference included a symposium on feeding for leaner meat.

Cornell scientists and a guest speaker from Canada explored various aspects of the subject in relation to livestock and poultry meat and milk. Dr. R. H. Barnes of Cornell introduced the discussions with a talk on dietary fat and coronary heart disease.

Following are reviews of papers which were presented:

INTRODUCTION—DIETARY FAT AND CORONARY HEART DISEASE, R. H. Barnes, graduate school of nutrition, Cornell—It would be only natural to assume that our knowledge of the cause of coronary heart disease has progressed to the point that this disease forms the basis for advocating leaner meat. This is not the case, nor is it the intent of this symposium to place undue emphasis on any one contributing factor.

The fact remains that heart disease is the number one killer in our country today. Furthermore, dietary fat has been implicated as a contributing agent, and the fat of the large farm animals as well as certain processed fats are high on the list of major suspects. I will review some of the outstanding scientific developments during the past year, but it must be understood that a firm conclusion regarding the implied role of

(Turn to LEANER MEAT, page 29)

• • •

Data on Trace Elements in Poultry Nutrition Reviewed

BUFFALO—One aspect of poultry nutrition which has been of considerable interest recently is that dealing with requirements for and nutritive activities of certain trace elements. And research developments in this field came in for attention at the Cornell Nutrition Conference in Buffalo.

Requirements of poultry for molybdenum, zinc and other trace elements were discussed by Dr. L. C. Norris of Cornell, and a summary of information on the newly discovered nutritive activities of selenium for chicks and poults was presented in a paper by Dr. M. C. Nesheim and Dr. M. L. Scott of the Cornell poultry department.

Following are summaries of these papers:

TRACE ELEMENT REQUIREMENTS, L. C. Norris—The trace elements either considered or reported to be required by the various species of poultry are bromine, cobalt, copper, iodine, iron, manganese, molybdenum, selenium and zinc. It is evident that much more work needs to be done on the quantitative requirements for trace elements. Interrelationships also need to be studied extensively.

Iodine: The amount needed by chicks has been found to be much less than previously considered necessary. Research results indicate that .5% iodized salt in chick rations should prevent development of iodine deficiency since this would supply at least .35 ppm in addition to that in the diet. They also indicate that the National Research Council requirement of 1.1 ppm (.5 mg./lb. of diet) is too high.

Bromine: Bromine has been reported to stimulate chick growth, but additional research seems necessary to determine whether this is a specific

(Turn to TRACE ELEMENTS, page 26)

• • •

Dairy Cattle Nutritionists Outline Findings at Cornell Conference

BUFFALO—Cornell University scientists have been conducting a long-term study of the effect of nutrition during early life upon the performance of dairy cows, but results to date are not sufficiently complete to justify a change in the amount of nutrients usually recommended for growing dairy cattle.

This was noted by Cornell scientists in one of the papers on dairy nutrition presented at the recent Cornell Nutrition Conference in Buffalo.

Another report dealt with a Cornell study of the effect of nutrition on udder edema, and a California scientist presented a technical paper on energy in dairy nutrition. A Cornell staff member discussed thyroprotein for cows, and sows also. Still another paper in the animal nutrition field covered recent research on estrogens and antibiotics in mink feeding.

Following are summaries of these reports:

EFFECT OF NUTRITION DURING EARLY LIFE UPON PERFORMANCE OF DAIRY COWS, J. T. Reid, J. K. Loosli, K. L. Turk, G. W. Trimberger, S. A. Asdell and S. E. Smith—A study was begun nine years ago to determine the effects of the level of nutrients provided during early life upon the lifetime performance of dairy cattle. Feeding levels employed from birth to time of first calving (as percentages of the upper level of TDN set forth in the Morrison Feeding Standards) are: Low, 65; medium, 100; high, 140.

Since at this time the range in age of animals allotted to this experiment is 2½ to 9½ years, very few animals have progressed to a stage of life as late as the fifth lactation period. Therefore, a cautious interpretation of the data is obligatory.

Data obtained to date indicate that low levels of feed intake result in delayed puberty and that the resulting animals have more difficulty calving at the first parturition than those fed usual or more usual amounts of feed. Heifers smaller than the usually accepted "normal" size at the time of first calving reach the size of their "medium" mates at or soon after time of the second calving (3½ to 4 years of age) provided they are liberally fed beginning at the time of the first calving.

The intake of feed early in life has had no definite effect upon the ease of conception even for the first pregnancy despite great differences in degree of fatness.

Although few animals have completed the fifth lactation period, no significant difference in the milk yield of cows fed the three levels of TDN during early life has been found to date. It should be noted that all cows are being liberally fed beginning with the first period of lactation.

This project is being continued with special attention being given to possible effects of nutrition during early life upon longevity and lifetime productivity. If feeding during early life has a significant effect upon the over-all performance of dairy cows, it might be one upon aging.

Results to date are not sufficiently complete to justify a change in the amount of TDN usually recommended for growing dairy cattle.

EFFECT OF NUTRITION ON UDDER EDEMA, G. H. Schmidt and L. H. Schultz—The common belief exists that heavy grain feeding during the dry period or shortly after calving will increase the severity of udder edema (udder caking, udder swelling). The practice of withholding grain after calving to control udder congestion, however, results in the underfeeding of high producing cows. There is some evidence suggesting that this underfeeding may result in an increased incidence of ketosis.

(Turn to DAIRY, page 28)

TABLE 2—Estimated Value, X, of Crude Protein (in cents/lb.) at Various Prices of Corn and Soybean Oil Meal

Price of 44% soybean meal, $/ton	Price of corn in dollars per ton															
	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70
50	2.41	2.25	2.09	1.93	1.77	1.61	1.45	1.29	1.13	.97	.81	.65	.49	.33	.17	.01
52	2.66	2.50	2.34	2.18	2.02	1.86	1.70	1.54	1.38	1.22	1.06	.90	.74	.58	.42	.26
54	2.91	2.75	2.59	2.43	2.27	2.11	1.95	1.79	1.63	1.47	1.31	1.15	.99	.83	.67	.51
56	3.16	3.00	2.84	2.68	2.52	2.36	2.20	2.04	1.88	1.72	1.56	1.40	1.24	1.08	.92	.76
58	3.41	3.25	3.09	2.93	2.77	2.61	2.45	2.29	2.13	1.97	1.81	1.65	1.49	1.33	1.17	1.01
60	3.65	3.49	3.33	3.17	3.01	2.85	2.69	2.53	2.37	2.21	2.05	1.89	1.73	1.57	1.41	1.25
62	3.90	3.74	3.58	3.42	3.26	3.10	2.94	2.78	2.62	2.46	2.30	2.14	1.98	1.82	1.66	1.50
64	4.15	3.99	3.83	3.67	3.51	3.35	3.19	3.03	2.87	2.71	2.55	2.39	2.23	2.07	1.91	1.75
66	4.40	4.24	4.08	3.92	3.76	3.60	3.44	3.28	3.12	2.96	2.80	2.64	2.48	2.32	2.16	2.00
68	4.65	4.49	4.33	4.17	4.01	3.85	3.69	3.53	3.37	3.21	3.05	2.89	2.73	2.57	2.41	2.25
70	4.90	4.74	4.58	4.42	4.26	4.10	3.94	3.78	3.62	3.46	3.30	3.14	2.98	2.82	2.66	2.50
72	5.15	4.99	4.83	4.67	4.51	4.35	4.19	4.03	3.87	3.71	3.55	3.39	3.23	3.07	2.91	2.75
74	5.40	5.24	5.08	4.92	4.76	4.60	4.44	4.28	4.12	3.96	3.80	3.64	3.48	3.32	3.16	3.00
76	5.65	5.49	5.33	5.17	5.01	4.85	4.69	4.53	4.37	4.21	4.05	3.89	3.73	3.57	3.41	3.25
78	5.90	5.74	5.58	5.42	5.26	5.10	4.94	4.78	4.62	4.46	4.30	4.14	3.98	3.82	3.66	3.50
80	6.14	5.98	5.82	5.66	5.50	5.34	5.18	5.02	4.86	4.70	4.54	4.38	4.22	4.06	3.90	3.74

TABLE 3—Estimated Value, Y, of Metabolizable Energy (in cents per 1000 cal.) at Various Prices of Corn and Soybean Oil Meal

Price of 44% soybean meal, $/ton	Price of corn in dollars per ton															
	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70
50	1.05	1.12	1.19	1.27	1.34	1.41	1.48	1.55	1.63	1.70	1.77	1.84	1.91	1.99	2.06	2.13
52	1.04	1.11	1.18	1.26	1.33	1.40	1.47	1.54	1.62	1.69	1.76	1.83	1.90	1.98	2.05	2.12
54	1.02	1.09	1.16	1.24	1.31	1.38	1.45	1.52	1.60	1.67	1.74	1.81	1.88	1.97	2.03	2.10
56	1.01	1.08	1.15	1.23	1.30	1.37	1.44	1.51	1.59	1.66	1.73	1.80	1.87	1.96	2.02	2.09
58	.99	1.06	1.13	1.21	1.28	1.35	1.42	1.49	1.57	1.64	1.71	1.78	1.85	1.94	2.00	2.07
60	.98	1.05	1.12	1.20	1.27	1.34	1.41	1.48	1.56	1.63	1.70	1.77	1.84	1.92	1.99	2.06
62	.97	1.04	1.11	1.19	1.26	1.33	1.40	1.47	1.55	1.62	1.69	1.76	1.83	1.91	1.98	2.05
64	.95	1.02	1.09	1.17	1.24	1.31	1.38	1.45	1.53	1.60	1.67	1.74	1.81	1.89	1.96	2.03
66	.94	1.01	1.08	1.16	1.23	1.30	1.37	1.44	1.52	1.59	1.66	1.73	1.80	1.88	1.95	2.02
68	.92	.99	1.06	1.14	1.21	1.28	1.35	1.42	1.50	1.57	1.64	1.71	1.78	1.86	1.93	2.00
70	.91	.98	1.05	1.13	1.20	1.27	1.34	1.41	1.49	1.56	1.63	1.70	1.77	1.85	1.92	1.99
72	.90	.97	1.04	1.12	1.19	1.26	1.33	1.40	1.48	1.55	1.62	1.69	1.76	1.84	1.91	1.98
74	.88	.95	1.02	1.10	1.17	1.24	1.31	1.38	1.46	1.53	1.60	1.67	1.74	1.82	1.89	1.96
76	.87	.94	1.01	1.09	1.16	1.23	1.30	1.37	1.45	1.52	1.59	1.66	1.73	1.81	1.88	1.95
78	.85	.92	.99	1.07	1.14	1.21	1.28	1.35	1.43	1.50	1.57	1.64	1.71	1.79	1.86	1.93
80	.84	.91	.98	1.06	1.13	1.20	1.27	1.34	1.42	1.49	1.56	1.63	1.70	1.78	1.85	1.92

POULTRY

Continued from page 22)

by which the values for protein and energy can be used to compute estimated nutrient values of other ingredients based on their metabolizable energy and protein content, using the data for the value of other nutrients developed by Combs and Romoser.

This procedure is useful as a quick guide to comparative values of ingredients under given price circumstances. However, the most accurate means of evaluating price relationships is to compare alternative formulations in which account has been taken of all nutrients of importance.

Another use for accurate energy values is to assist in achieving optimum nutrient balance in respect to energy:protein and other energy:nutrient proportions. Productive energy values have been useful for this, but metabolizable energy:nutrient ratios should ultimately be a better tool. Shown in Table 5 are approximate metabolizable energy:protein ratios which represent reasonable formulation targets. In general, productive energy values are two thirds of metabolizable energy values, but this isn't a constant ratio.

While energy:protein ratios are useful, there are shortcomings in expressing protein requirement in terms of such ratios, such as (1) they are applicable for each ration only over limited ranges of energy; (2) they are influenced by amino acid balance; (3) they are dependent to a degree on body size, environment and perhaps other factors. Also, such a ratio is no better than the information on protein requirement on which it is based. For instance, the protein requirement of hens is generally said to be 15% of the ration. Recent Cornell studies indicate a need for 15% protein for moderate size Leghorns and 16.5% for smaller Leghorns. Other studies indicate a requirement not greater than 13% for caged layers.

TABLE 4—Equations for Estimated Nutrient Value of Feed Ingredients Based on Metabolizable Energy

Ingredient—	Equation for deriving estimated nutrient values* in dollars per ton
Corn, yellow	1.8 X + 32 Y + 1.9
Wheat	2.6 X + 30.4 Y + 2.9
Milo	2.2 X + 30 Y + 1.8
Oats	2.4 X + 24.2 Y + 2.4
Barley	2.4 X + 26.2 Y + 2.6
Hominy feed, yellow	2.2 X + 26.4 Y + 9.2
Wheat flour midds.	3.6 X + 24.4 Y + 3.7
Wheat standard midds.	3.6 X + 16.8 Y + 4.9
Wheat bran	3.2 X + 10.8 Y + 6.1
Molasses	0.6 X + 18.2 Y + 3.9
Soybean oil meal, 50%	10.2 X + 22.2 Y + 5.6
Soybean oil meal, 44%	9.2 X + 20.6 Y + 6.1
Fish meal, menhaden	12.2 X + 19.8 Y + 26.0
Meat and bone scraps, 50%	10.1 X + 18.2 Y + 26.8
Corn distillers solubles	5.4 X + 26.0 Y + 11.7
Dried whey	2.4 X + 17.0 Y + 10.8
Alfalfa meal	3.5 X + 12.8 Y + 34.2
Inedible industrial tallow	66.0 Y

*Values for X (cents per pound protein) and Y (cents per therm metabolizable energy) corresponding to market values for corn and soybean oil meal contained in Tables 2 and 3 are used to obtain estimated nutrient values with these equations.

REQUIREMENT OF CHICKS FOR METHIONINE AND CYSTINE, T. S. Nelson, L. C. Norris, F. W. Hill, M. L. Scott and G. F. Heuser—A series of experiments was conducted at Cornell to determine the methionine and total sulfur-containing amino acid requirements of the chick. Practical rations of varying protein and energy content were used. Purified rations also were used in the studies.

Results indicate that the total sulfur-containing amino acid requirement, expressed as a percentage of protein, is about 3.1% for maximum growth and 3.6% for maximum feed efficiency. Since the cystine in these rations ranged from .7 to .9% of the protein, it appears that the methionine requirement under conditions of these experiments was from 2.6 to 2.9% of the protein. These figures should not be considered to represent the absolute methionine requirement since no effort was made to furnish the chicks with the maximum cystine they can use. It is possible that in rations containing more cystine, the methionine requirement might be lower. On the other hand, since cystine in commercial rations does not vary much, the requirements obtained for total sulfur-containing amino acids and methionine should be of practical use to the feed manufacturer.

NEW INFORMATION ON VITAMIN A REQUIREMENTS, M. L. Scott, F. W. Hill, L. C. Norris, G. F. Heuser, H. E. Butters, R. E. Reynolds and E. H. Parsons, Jr.—With widespread use of antioxidants and new manufacturing processes for stabilizing vitamin A supplements, it was considered desirable to re-evaluate

TABLE 5—Estimated Protein Requirements for Various Kinds of Rations Expressed as Metabolizable Energy:Protein Ratios (ME/P) and Their Approximate Equivalents in Productive Energy:Protein Ratios.

Kind of ration	Estimated protein requirement as ME/P ratio*	Approximate equivalent productive energy: protein ratio*
Chick starter (0-4 weeks)	60- 62	41-43
Chick starter (0-7 weeks)	64- 66	44-46
Broiler finisher (7-10 weeks)	70- 74	49-52
Layer (medium-large hens)	88- 92	60-63
Layer (small hens)	81- 85	56-59
Turkey starter (0-4 weeks)	41- 44	28-31
Turkey grower (4-8 weeks)	51- 54	35-37
Turkey grower (8-12 weeks)	62- 65	43-45
Turkey grower (12-16 weeks)	71- 74	49-51
Turkey grower (16-20 weeks)	82- 85	56-58
Turkey finisher (20 weeks-)	100-105	70-72

*Ratios derived by dividing energy concentration (calories per pound) by percentage of protein in the ration.

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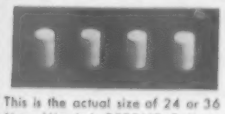

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vitamin A requirements using vitamin A preparations stabilized by envelopment of the vitamin droplets in gelatin, fat or wax and further stabilized by use of antioxidants.

Requirements were determined, under these conditions, for (1) laying and breeding hens using two strains of Leghorns; (2) for starting chicks, using progeny of hens fed various levels of vitamin A; (3) for White Pekin ducks from starting to market weight; (4) for Chinese Ringnecked pheasants from 0 to 5 weeks. The basal rations contained adequate levels of all nutrients except for vitamin A during each period for which vitamin A requirement was being determined.

From the data, it was estimated that, under conditions of the studies, the minimum requirement of vitamin A for the White Leghorn hens approximates 1200 to 1600 I.U. of vitamin A per pound of ration. This level is sufficient to support satisfactory production, hatchability and health of the layers and to minimize blood spots in the eggs. Higher levels (5000 I.U. or more) may improve performance of the progeny in some instances due to higher carryover through to the egg to the chick.

Survival and performance of the progeny were sub-normal for hens fed 800 I.U. The progeny of all other lots showed satisfactory early growth and survival, provided they were fed 400 to 600 I.U. or more of stabilized vitamin A per pound of chick ration.

Ducklings and pheasants, the progeny of ducks and pheasants fed commercial rations, required 500 to 600 I.U. of vitamin A per pound of starting ration, when this vitamin was supplied in the form of a commercial stabilized supplement.

EVALUATION OF ANTIBIOTICS, ARSENICALS, NITROFURANS AND SURFACTANTS, G. F. Heuser—Of the growth promoters, antibiotics have been given the most attention. A study of 137 reports dealing with young chickens shows increased gains of antibiotic-fed lots in 133 trials and no effect in 21 trials. Improved feed efficiency was reported in 27 trials and no difference in five trials. The most plausible theory for the growth response concerns the influence of the antibiotic on the microflora of the intestinal tract. Earlier experiments involved mostly low level feeding, although the above summary included 17 reports dealing with levels of 50 to 100 grams or more per ton.

In 35 reports on turkeys, favorable growth results were shown in 33 trials, with three trials showing no improvement. In many instances response was greater than with chickens.

In 26 trials with mature birds involving low levels, only 9 trials showed an increase in egg production. One out of 11 reports indicated improvement in hatchability and 3 out of 10 showed improved feed utilization. In 26 experiments involving high level feeding, 20 trials showed increased egg production. Hatchability was improved in 7 out of 13 reports, and feed efficiency was improved in 9 out of 12 trials. Some of the conditions under which antibiotics improved results with mature stock were lower production, exposure to disease, or stress of heat or other conditions.

An important factor in results from antibiotics in rations of both young and mature stock is the "disease level" and stress factors. Inclusion of low levels is generally accepted

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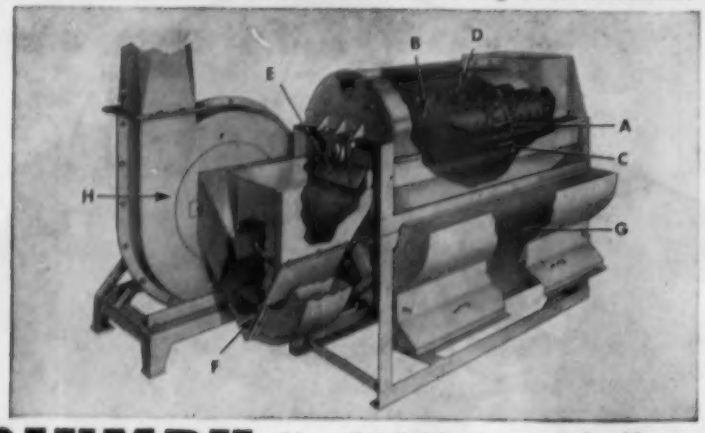

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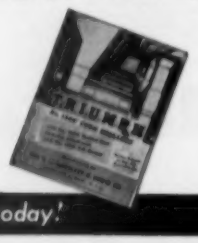

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for young stock, with higher levels justified where disease level is greater. For mature birds, high levels seem to be indicated when the disease level is greater and in times of stress such as at the beginning and end of the laying period, at times of vaccination, and at times of extreme temperature.

Arsenicals: Some of the results from use of arsenical compounds have been faster growth, improved feed conversion, better pigmentation, increased egg production and less mortality. Some of these compounds are specific for certain diseases. In 18 published reports on feeding arsenicals to chicks there were weight gains in 22 trials and no increased weight in 6 trials. Feed efficiency was improved in 8 out of 11 trials. Similar response was shown with turkeys. In most trials benefits of arsenicals have not exceeded those of antibiotics; in a few reports, results have been additive.

Nitrofurans: These are medicaments rather than growth promoters. Furazolidone, for instance, is used as a specific for fowl typhoid and histomoniasis. Published reports are not too numerous. As far as growth stimulation is concerned, half of the trials reported an increase. A few more trials indicated improvement in feed efficiency. Results were more effective in heavily contaminated environments.

Surfactants: A summary of 13 reports with young stock showed increased gains in eight trials, no growth response in 4 trials and a decrease in growth in 3 trials. The response generally was not so great as that from antibiotics and there was no added effect when antibiotics also were fed. Results have been variable.

TRANQUILIZERS FOR GAME BIRDS, Oliver H. Hewitt and Richard E. Reynolds, Cornell University and New York Conservation Department—One of the most serious problems in rearing wild gallinaceous birds in close confinement is feather picking and cannibalism. Reserpine and other tranquilizing drugs were administered in food to ring-necked pheasants at the Ithaca Game Farm to see whether they would help in reducing behavior problems.

The experiments reported on indicate that a low level of reserpine in the diet may be of value in preventing fighting among cocks in breeding condition and in reducing incidence of feather picking among juveniles during the rearing period. It can't be recommended for breeding hens because it depresses ovulation and reduces fertility and hatchability of eggs. There is need of investigation on lower levels of reserpine and on effects of other types of "ataraxic" drugs alone and in combination.

TRACE ELEMENTS

(Continued from page 22)

effect. The conclusion cannot be made from research findings that bromine is an essential mineral nutrient since no evidence of a metabolic function has been revealed. The possibility exists that observed growth increases may have been caused by indirect effect on microorganisms of the intestinal tract or by some unknown nonspecific effect.

Cobalt: Cobalt, according to one report, promotes increased growth in

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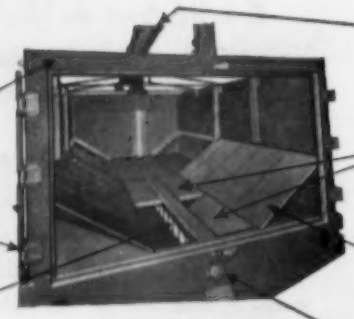

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chicks in the absence of vitamin B_{12}. However, the vitamin B_{12} requirement of chicks should be supplied directly by means of the vitamin rather than indirectly by including cobalt in the diet.

Copper: The NRC tentative requirement of chicks for copper is 2 ppm. In Cornell work on unidentified minerals we have supplied 4.25 ppm of copper in the mineral mixture. At this intake, the blood hemoglobin was normal. In one experiment copper was increased to 25 ppm without either improving or depressing growth.

Iron and Manganese: No recent work has been done on iron and manganese requirements. In work on unidentified minerals we have included about 3.5 times as much iron as the NRC requirement and have found that doubling this quantity had no effect on growth. Blood hemoglobin levels were normal. Studies on the quantity of iron required and availability of iron in different compounds seem to be indicated. Additional research on manganese may not be needed since work with this element is unusually complete.

Selenium: It has recently been reported that selenium, a mineral element studied extensively because of its toxicity for all animals, prevents symptoms in rats previously found to be preventable with vitamin E or brewers dried yeast. Other workers showed that selenium prevented exudative diathesis in chicks fed a torula yeast diet deficient in vitamin E. In the presence of vitamin E, Leach and Norris recently obtained no growth stimulation or other effects in chicks fed a purified Drackett soybean protein diet. In view of these findings, the inclusion of selenium in chick rations seems entirely unnecessary and perhaps undesirable in view of evidence that 10 or more ppm is toxic.

Zinc: Zinc deficiency involving poor bone formation has been observed in chicks fed a Drackett soybean protein diet containing calcium greatly in excess of the NRC requirement. Zinc has also been observed to prevent enlarged hocks and poor feathering in turkey poults fed a low zinc diet. Because zinc deficiency involving poor bone formation has been recognized only in chicks and poults fed purified diets containing much less zinc than present in practical rations, there seems to be little reason for supplementing chick rations with zinc, and perhaps also poult rations, as long as the calcium content is kept down to a reasonable level. Development of enlarged hocks in chicks fed practical rations occurs infrequently, and enlarged hocks in turkeys on farms have not yet been shown to be caused by zinc deficiency.

Molybdenum: Molybdenum has been shown to be an essential mineral, but the quantitative requirement appears to be exceedingly small. In view of the failure in Cornell work to obtain a growth increase from the addition of molybdenum to a purified casein basal diet and a slight increase obtained by the addition of molybdenum to a purified Drackett protein bgasal diet, we do not believe that the evidence warrants the addition of molybdenum to practical chick diets. The feeding of diets low in molybdenum to chicks and breeders does not prevail in practice. From statements at the Poultry Science Assn. meeting, the available molybdenum content of practical chick rations can be calculated to be 2.4 to 2.8 ppm. This appears to be greatly in excess of the requirement for molybdenum since we have obtained no increase in growth in chicks fed a purified casein basal diet containing as little as .2 ppm. Results of determination of molybdenum content of soybean meal and cereals also indicate that molybdenum deficiency is unlikely to occur in practice in spite of the fact that some of it may not be available.

Unidentified Minerals: Cornell and Texas workers have reported previously the evidence indicating that the chick requires for growth an unidentified mineral or minerals. However, except for the work on bromine, no positive indications of the identity of the unidentified mineral or minerals have yet been obtained.

NUTRITIVE ACTIVITIES OF SELENIUM, M. C. Nesheim and M. L. Scott—Research results show that se-

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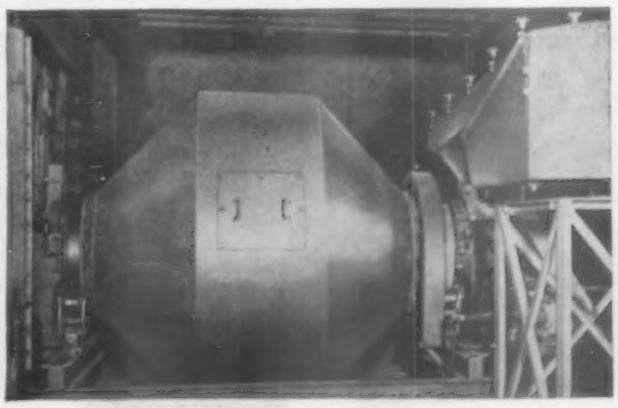

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lenium, in very minute amounts, completely prevents exudative diathesis in chicks receiving vitamin E-deficient diets containing either torula yeast or isolated soybean protein. It was effective at levels as low as .1 ppm of selenium as either sodium selenite or in the form of seleno-cystathionine.

In one experiment with chicks fed a high level of vitamin E alone and in combination with selenium, the chicks fed selenium or selenium plus vitamin E grew faster than those receiving vitamin E alone. However, the vitamin E did not completely prevent exudative diathesis in this test, so further work with still higher levels of E should be done before the growth responses from selenium over vitamin E alone can be confirmed. In other work with a purified diet supplemented with adequate vitamin E, no growth stimulation was obtained from selenium.

Presently available results indicate that selenium is ineffective in preventing encephalomalacia. Further work is in progress to provide more information on this problem.

Muscular dystrophy can be produced in chicks fed diets low in methionine and vitamin E, so an experiment was conducted to determine the effect of selenium on muscular dystrophy produced in this way. It did not prevent the conditions at levels used, and further work with higher levels is in progress.

Studies on the selenium content of poultry feedstuffs have been made, and although the selenium content of natural feeds may vary with the area where the feed is grown, it seems unlikely that chick rations composed of natural materials are deficient in selenium. The requirement is very low.

Since turkey poults rarely develop exudative diathesis when fed vitamin E-deficient diets, selenium does not have as dramatic an effect in poults as it does in chicks. No growth response from selenium was obtained with poults. Work is under way to determine if it has any effect on the enlarged hock disorder.

The discovery of the relationships between selenium and vitamin E should open the door for new insight into the functions of this vitamin. Exudative diathesis is a complex deficiency symptom. Further work on the relationships of vitamin E and selenium to this phenomenon may well show that both are necessary to correct the physiological defect responsible for this condition.

Many basic findings of importance may stem from the discovery of the nutrient value of selenium even though present information indicates that selenium supplementation in present practical chick rations is unnecessary.

DAIRY

(Continued from page 22)

Therefore, before recommending this practice, it would seem desirable to be sure of its value in control of edema.

A study was conducted to gain more information regarding the effect of grain feeding on edema. Sixty-three cows from the Cornell University dairy herd were divided into three groups at the beginning of the eight-week dry period. One group received no grain during the dry period, a second group received 6 lb. daily, and the third group received 15 lb. daily.

Those fed heavily during the dry period had slightly more edema than the other two groups, but the differences were not significant. Heavy grain feeding immediately after calving did not appear to increase the severity of edema. High producing cows were found to have more edema than low producing cows—supporting the much stated theory that high producing cows have more edema—but no differences in edema existed between fat and thin cows. It appears that the severity of edema was based on an inherent physiological phenomenon, for cows tended to have the same amount of edema year after year, regardless of the type and amount of feed consumed.

CALORIES IN THE NUTRITION OF DAIRY COWS, Max Kleiber, University of California, Davis—The calorie as a unit for measuring chemical energy is suitable for expressing the level of animal feed requirement and for measuring animal performance as food utilizers. Calories do not reveal the nature of specified feed effects. For feed evaluation, energy content of feeds is inadequate.

Evaluation of feed should be based on replacement equivalents. Replacement equivalents for evaluating dairy feeds are best measured by replacement trials with groups of cows. At present, the most reliable replacement equivalents for dairy feeds are the Scandinavian feed units, which are barley replacement equivalents.

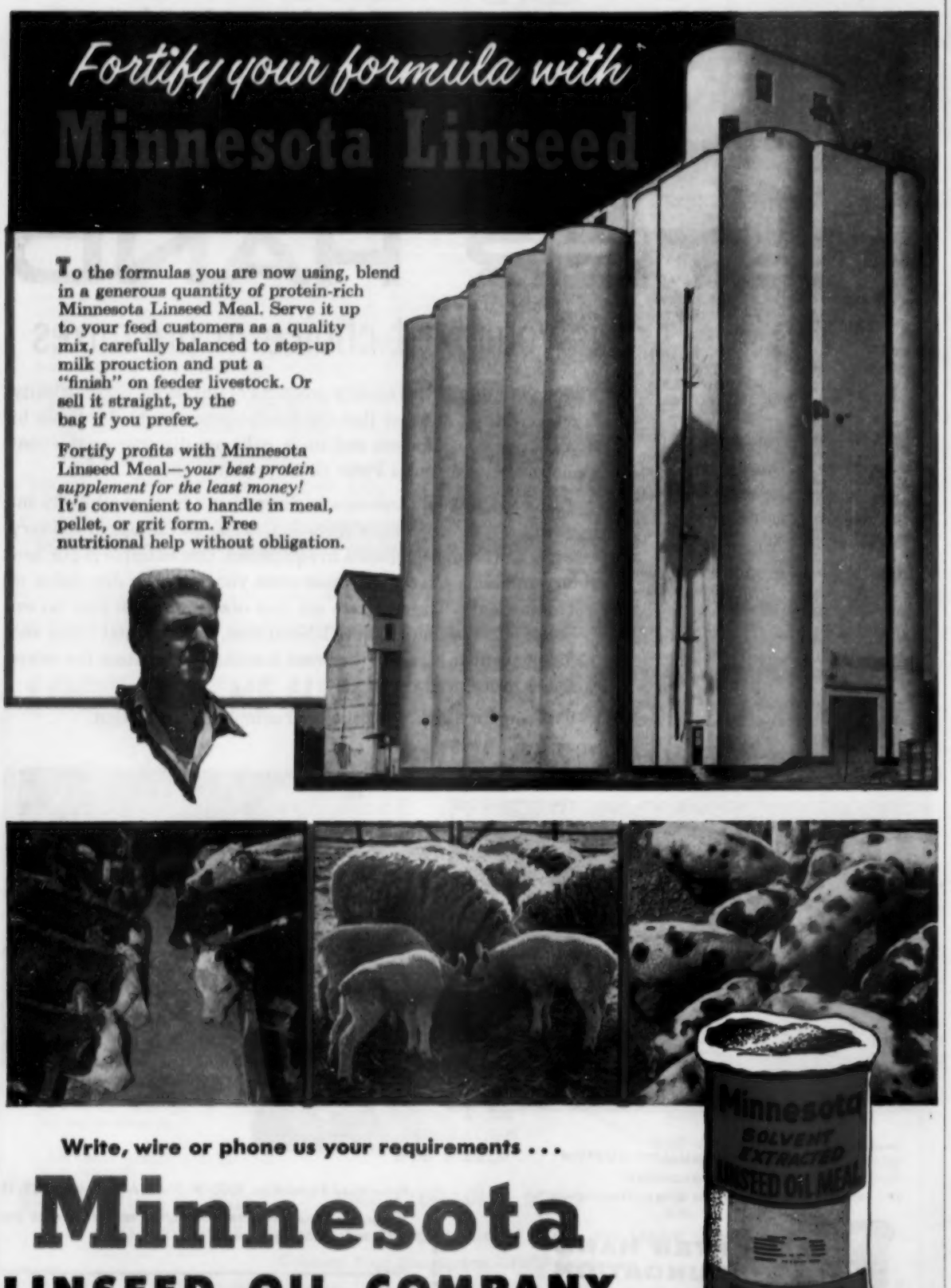
For feeds with high protein content the measurement of barley equivalents may lead to errors resulting from changes in the protein contents of the ration. To eliminate this difficulty, we have chosen a reference substance with variable composition, namely, a mixture of casein and glucose. The result tells how many grams of casein and how many grams of glucose 100 grams of feed can replace in a dairy ration.

The fuel value of protein can be measured in calories, but the major nutritive effect of feed protein for milk production is not that of a fuel. The common denominator for feed value is not the calorie but the dollar.

THYROPROTEIN FOR COWS AND SOWS, William Hansel—(The author's summary and conclusions from a review of literature.)

Thyroprotein feeding produces marked increases in milk production in the cow for relatively short periods of time. Production per lactation appears to be increased only slightly, and in some cases not at all, when thyroprotein is fed for either short or long-term periods.

Thyroprotein withdrawal in the cow is followed by a decline in milk production regardless of whether the withdrawal is accomplished abruptly or gradually. This decline can be partly alleviated by placing cows on good pasture immediately after the thyro-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protein is withdrawn, or during the withdrawal period.

Feeding thyroprotein to cows for short (60- to 90-day) periods does not adversely affect production in subsequent lactations. When fed for longer periods, it may do so, but sufficient evidence is not yet available on this point.

Decreases in body weight associated with thyroprotein feeding and increases occurring after thyroprotein withdrawal are largely, but not entirely, due to changes in gastro-intestinal fill.

Thyroprotein feeding does not increase the fat percentage of the milk over any extended period of time, although it sometimes does so for short periods of time.

The efficiency of milk production as measured by FCM produced per pound of TDN consumed appears not to be reduced by thyroprotein when it is fed for periods of 60 to 90 days during the declining phase of lactation. Long-term feeding of the hormone may reduce the efficiency of production if changes in body weight are considered in making the estimates of efficiency.

There is no good evidence to indicate an adverse effect of thyroprotein feeding on fertility, general health or resistance to disease in dairy cows.

Feeding thyroprotein to sows for three days prior to farrowing and during the first seven days of lactation appears to increase the rate of gain of the baby pigs and may decrease the number of pigs lost during this critical period, but further tests are needed to confirm this finding.

ANTIBIOTICS AND ESTROGENS IN MINK FEEDING, R. G. Warner, C. F. Bassett and H. F. Travis, Cornell University and U.S. Fur Animal Experiment Station — Certain mink ranchers at one time experienced poor reproduction in their herds, and subsequent investigation showed that some of the herds had been feeding chicken offal obtained from birds "caponized" with diethylstilbestrol implants. With the advent of stilbestrol feeding to beef cattle, the mink rancher again became alarmed since beef tripe is a common ingredient in many ranch rations.

A series of studies was initiated at the U.S. Fur Animal Experiment Station at Ithaca to determine minimum levels of stilbestrol that would affect mink reproduction and growth.

Research also has been conducted at the station to determine the influence of antibiotics on growth of kits from weaning to pelting and to study its effect on size and quality of the pelt.

The results are summarized as follows:

The maximum level of stilbestrol which will allow normal reproduction in the female mink appears to be between 6 and 10 micrograms per day. Intakes of 10 micrograms per day or greater when fed during the breeding season resulted in a marked reduction in reproductive performance.

Minks fed 10 to 100 micrograms of stilbestrol during one breeding season will produce normally the following year if allowed more than an eight-month recovery period. The effect of a shorter recovery period has not been studied.

It appears from all available evidence that under normal management conditions, the reproductive performance of mink will not be impaired by the use of tripe secured from stilbestrol-fed steers.

The use of 3 mg. of Aureomycin or Terramycin per pound of wet feed (as fed basis) fed to growing mink kits resulted in larger gains, longer kits and heavier and larger pelts.

LEANER MEAT

(Continued from page 22)

specific fats in the development of coronary heart disease will not be attempted.

With all the research that is being done, it is nigh impossible to get two scientists to agree unequivocally on the simplest statement of fact concerning any phase of the tremendous research program. If we attempt to combine information available during the past year with general

(Continued on page 32)

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Animals Requiring Additional Treatment	936	87
Number per 1,000 head	55	12.8
Mortality, Number of Animals	169	21
Number per 1,000 head	5.1	1.6

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conclusions reached previously, the following generalizations seem justified:

1. The level of blood cholesterol is probably one of the important etiological factors in development of coronary heart disease.

2. One of the nutritional factors influencing the level of blood cholesterol is fat.

3. Both the amount and kind of dietary fat are important in the regulation of blood cholesterol.

4. The absence of fat or the ingestion of a relatively low-fat diet decreases the level of blood cholesterol.

5. Fat that is predominately saturated will cause the blood cholesterol to rise, if the initial value is low.

6. Fat that is predominately unsaturated will cause the blood cholesterol to fall if the initial value is high.

7. Although it seems well established that part of the above effects are accounted for by the component fatty acids of the fat, both the rise in cholesterol obtained with some fats and the fall obtained with others, may be contributed to by non-fatty acid substances in dietary fats.

There is no evidence at this time for the assumption that certain unsaturated fatty acids—the so-called "essential fatty acids"—are the only fatty acids that lower blood cholesterol.

Only a few participants in the vast research being done are willing to advocate radical changes in eating habits, but there is a strong general impression that the intelligent citizen who reads his newspapers and magazines carefully is trimming more and more fat from the slice of roast beef that he is served.

We can draw our own conclusions, but we must wait a while longer before making statements that will influence the health and economic status of the public.

FEEDING FOR LEAN MEAT, E. W. Crampton, Macdonald College, Quebec—The animal husbandman has long known that there are differences in the natural fleshing of animals of different types and breeds. Breeding studies have indicated that some of these differences in fleshing (as distinct from fattening) can be "bred into" strains within different breeds.

If animals are to be slaughtered at specified weights or ages, then it is also possible to modify the proportion of lean in the carcass by feeding practices. Success with this method depends on the fact that different types of tissue tend to develop at different rates at different ages. Not only do types of tissue differ in rate of development, but the same type of tissue, as voluntary muscle for example, tends to develop more rapidly in some parts of the carcass than in others at specific age periods.

Marked differential effects can be produced between tissues by feeding. Limited nutritive supply at any age causes greatest inhibiting effects on the tissues or those parts of any one tissue which have the highest growth intensity at that age. Similarly, good nutrition at any age benefits most the parts of highest growth intensity at that time.

In the case of muscle and fat, gradients have been demonstrated in their order of development from the head and neck backwards and from the lower parts of the limbs upwards to the loin region. Furthermore, external fat develops much later than skeletal muscle. Consequently, fostering a high plane of nutrition at relatively young ages and subsequently a reduced plane of nutrition in later ages tends to emphasize lean development and minimize fat deposition in the market carcass.

This is the basic principle that is involved in all feeding work where the object is to produce lean meat.

EFFECT OF NUTRITION ON FAT CONTENT OF POULTRY, F. W. Hill, M. L. Scott and L. B. Carew, Jr.—Data on the composition of poultry meats show that broilers and young turkeys are lowest in fat content; roasting chickens and 24-26-week-old turkeys are intermediate in fat content; and ducks are high in fat content. A minimum fat content is considered necessary for proper "finish." Overfatness can also be achieved to the point that consumer acceptance is jeopardized, as has occurred with ducks.

Non-nutritional factors influencing fatness are age, sex, strain and estrogen treatment. The effects of diet on body fat content are mediated primarily through three factors—energy concentration, protein concentration and total feed intake. Although these factors are separable to some extent, the nature of their interactions is such that any apractical application directed toward control of degree of fatness in meat production must deal with them simultaneously.

It has been shown that fat content in the growing chick is related to the energy-protein ratio—a high ratio (excess energy in relation to protein) leading to greater fat production and a low ratio causing less fat production.

The basic question of the limits of nutritional control of body composition may be a matter of degree. The range of fat content associated with maximum growth rate in ducks is 24 to 35% of the fresh, oven-ready carcass. For the growing chick, the range is 15 to 30% of the carcass dry matter (5-10%, fresh basis). To achieve degrees of fatness either lower or higher than the limits of these ranges, diet alterations which reduce growth rate are apparently necessary. The characteristic body composition of a species or strain is under genetic control; the effect of nutrition, consistent with normal development, is confined to a limited range above and below the characteristic composition.

That over-fatness is not a practical problem in broiler and turkey meat production is apparently due to the nature of these species at the age and stage of development they are normally produced and marketed.

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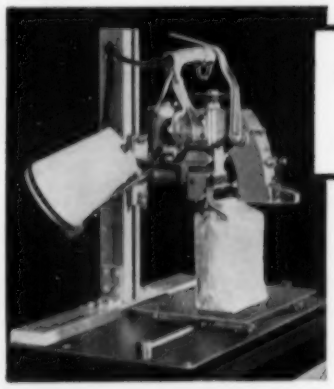

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body fat is that animals synthesize saturated fatty acids and oleic acid from dietary carbohydrate, protein and other fatty acids. Polyunsaturated fatty acids are derived only from the diet directly or from each other.

Marked changes can be produced in chicken body fat by diet.

The significance of fats and polyunsaturated fatty acids in human nutrition is of great current interest. Means by which total fat content and the fatty acid distribution in poultry meats can be regulated are indicated. Further work is needed to define the limits and degree of regulation in more quantitative terms for any application in practical poultry meat production.

FATNESS, TENDERNESS AND ACCEPTABILITY OF MEAT, G. H. Wellington and J. R. Stouffer—Fat has long been considered as a major indication of quality in meat. With increased interest in low-fat diets, it is logical that the true value of fat in its effect on quality and acceptability be scrutinized.

The meat industry as well as the public is giving careful consideration to whether fat should occupy the important position that it does in beef evaluation.

Some reports have shown a strong consumer tendency to select lean beef cuts, although some consumers preferred each grade. Meanwhile, though there are indications housewives want lean beef, the higher grades with more fat continue to sell for higher prices.

Some leaders in the industry note that the housewife expresses her preference every day in the prices she is willing to pay for beef. Some stores offer the better grades in one meat case and a lower, leaner grade in another case. As yet there has been no large expansion of the lower grade offering. Some chain store supervisors have said they avoid beef grading lower than low choice because experience has shown that low good and standard cattle may result in more customer complaints.

With so many factors to be considered under the subject of fat and acceptability of beef, present Cornell studies have been confined to obtaining more objective evaluation of the influence of fat and, particularly, of marbling on two major palatability factors—tenderness and juiciness.

Fifty-five cattle of widely varying fat content and extent of marbling development were studied to observe the effect of marbling. Marbling was determined subjectively by the federal grading service. Differences observed in tenderness as measured by mechanical sheet resistance were not significant, but an experienced palatability panel observed increased tenderness that was significantly correlated with more abundant marbling. Eight per cent of the tenderness differences detected by the panel were apparently due to differences in the degree of marbling. The panel observed that as the degree of marbling increased, there was a highly significant increase in the juiciness of the meat.

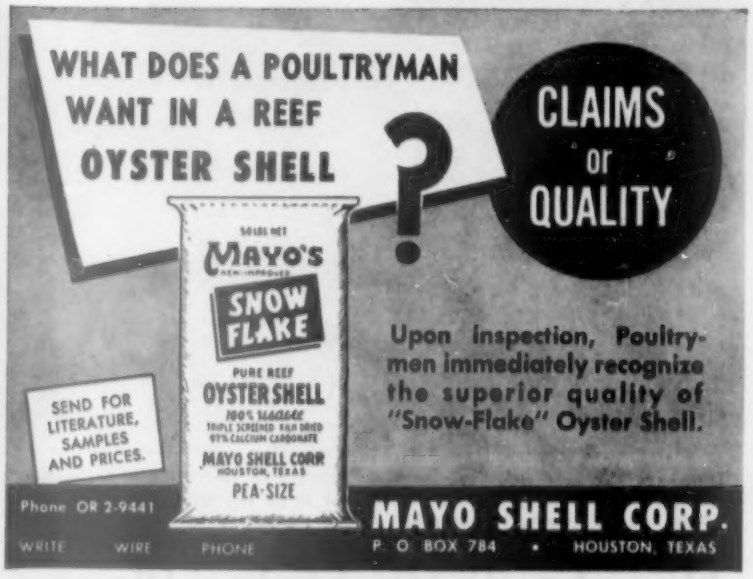
NUTRITION AND FAT CONTENT OF MILK, J. K. Loosli—Genetic factors are more important than any other in determining the fat content of cow's milk, although certain other factors play a part—such as stage of lactation period. Each cow has an inherited level of milk fat which is repeated from year to year, subject to certain variables. Diet, too, has an influence, but it's usually relatively small or of short duration.

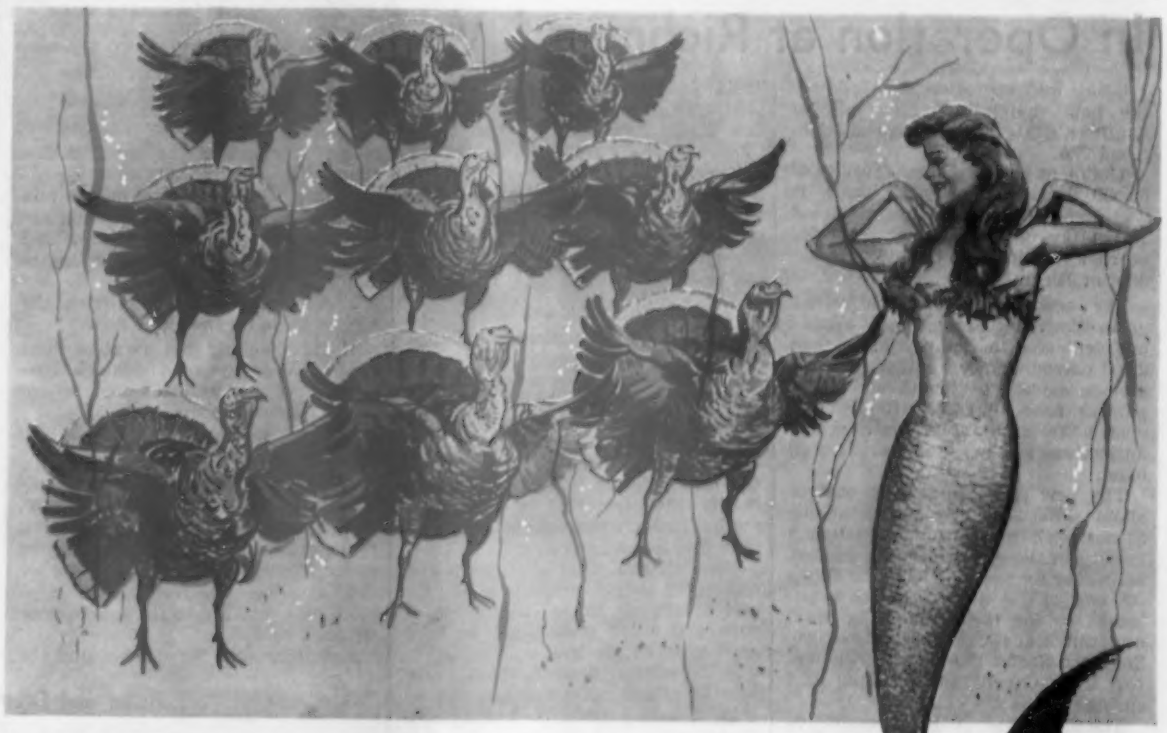
In the U.S., milk is bought and sold largely on its fat content. This practice started when butter was the primary product from milk. Many attempts have been made to feed more fat into milk. Of these only a few have been successful. In special cases the ration can also cause a decrease in fat content.

However, none of the nutritional results which have been obtained appear to offer a practical method of producing a low-fat milk in large quantity.

ADDS PELLETING MILL

ALLIANCE, NEB.—Neuswangers, grain and feed operator here, has added a new feed pelleting mill to its facilities. A 40 ft. by 120 ft. building has been added to the existing feed mill, adjacent to the firm's grain elevator. Two large bulk delivery tanks from which trucks can be loaded have also been added.





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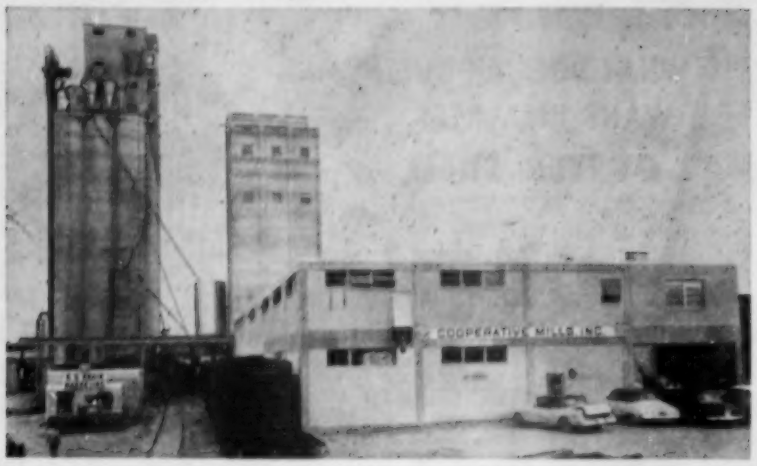


Here are the new Southern States Cooperative feed mill and elevator at Richmond. The 750,000-bu. grain elevator is on the left and the feed warehouse and manufacturing building on the right.

New Southern States Plant In Operation at Richmond, Va.

Going into operation this fall was the new "batch-mix" feed mill of Southern States Cooperative at Richmond, Va.

The plant has an annual capacity of 60,000 tons on a one-shift basis. It will manufacture a complete line of 40 poultry, dairy and stock feeds for patrons within a 50- to 75-mile radius of Richmond.

The new mill and a 750,000-bu. grain elevator were formally opened and dedicated in October. More than 2,000 patron-members, other farmers, service agency personnel and other persons from the area attended the open house event. Representatives of agriculture and business also were on hand.

The new plant, built at a cost of about $750,000, provides Southern States with the first manufacturing facility in the city where the cooperative was founded in 1923. The $450,000 cost of the elevator, which is adjacent to the mill, brings the total investment at Richmond to $1,200,000. Southern States purchased the elevator from Cargill Incorporated last spring.

The mill is operated by Cooperative Mills, Inc. It is the newest of six plants which together furnish Southern States patrons with more than 800,000 tons of formula feed annually, officials pointed out.

Sprout, Waldron & Co., Muncy, Pa., was the general contractor for the mill. The Howard Construction Co. of Richmond was the sub-contractor on the building.

Highly Mechanized

The highly mechanized, semiautomatic operation, it was noted, requires only 35 employees in plant and office. This was said to be less than half the labor required in older mills of like capacity.

Of steel and masonry construction, the mill building is six stories high in its manufacturing section, two stories high in the warehousing section, and has a basement.

More than 90% of all ingredients, coming in by rail and truck, are received in bulk. Some 600,000 bu. of corn and small grains will be used each year at the mill.

It is estimated that about three fourths of the mill's tonnage will be shipped out by truck, the rest by rail. Distribution is made through more than 75 Southern States service agencies in central Virginia or by bulk truck directly to farmers in the area.

Finished feed in bags goes directly to rail cars or trucks for unloading or is conveyed by belt to the second floor warehouse for temporary storage. Feed to be delivered in bulk is spouted off the production line to bulk trucks.

The new mill has been in operation since September.

Mill Operations

Following is an outline of the mill flow, with the numbers corresponding to the numbers in the simplified sketches of the plant operations:

1. Soft feeds and ground grains are assembled and weighed in a 4,000-lb. hopper scale from 16 bins through 16 feeder screws, and the batch is discharged into one of two mixers.

2. Two 2-ton horizontal mixers mix the ingredients. Micro-ingredients are dumped directly into the mixer and then combined with the other ingredients.

3. A bucket elevator carries the mix to a bin on the third floor.

4. This holding bin receives feed from the mixers and enables controlled release to equipment where liquid ingredients are added.

5. Magnetic hump to remove any metal particles.

6. Molasses, fish solubles and animal fats are added in this Duplex mixer; also at the end of the mixing cycle, crimped oats or barley may be added through a Merchen feeder.

7. A bucket elevator takes the complete feed mixture to the fourth floor sifters.

8. Sifters—one for mashes and the other for dairy feeds—to take care of any lumps after liquid additions.

9. Feeds to be bagged are spouted to the sacking scales on the second floor. This scale will weigh up to 12 100-lb. bags a minute.

10. Sewing machine.

11. Bagged feed is discharged onto a conveyor belt which carries feed to the warehouse, or down chutes to ground level to be loaded directly into trucks or cars.

12. Feeds to be pelleted are spouted into pellet work bins.

13. Feeds going out in bulk go through a conveyor which discharges directly into bulk trucks.

14. There are four pellet work bins.

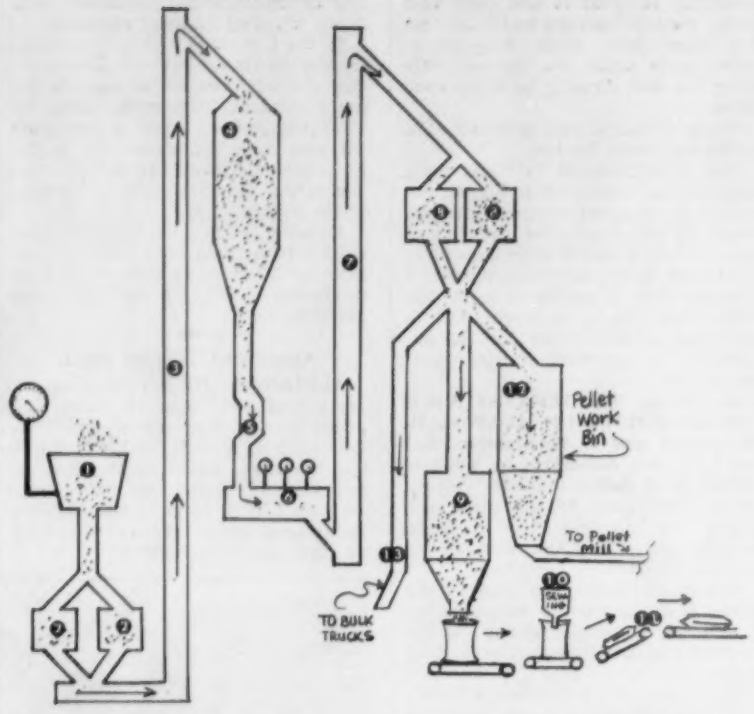
15. The pellet mill has a capacity of six to eight tons per hour.

16. Vertical pellet cooler on the first floor.

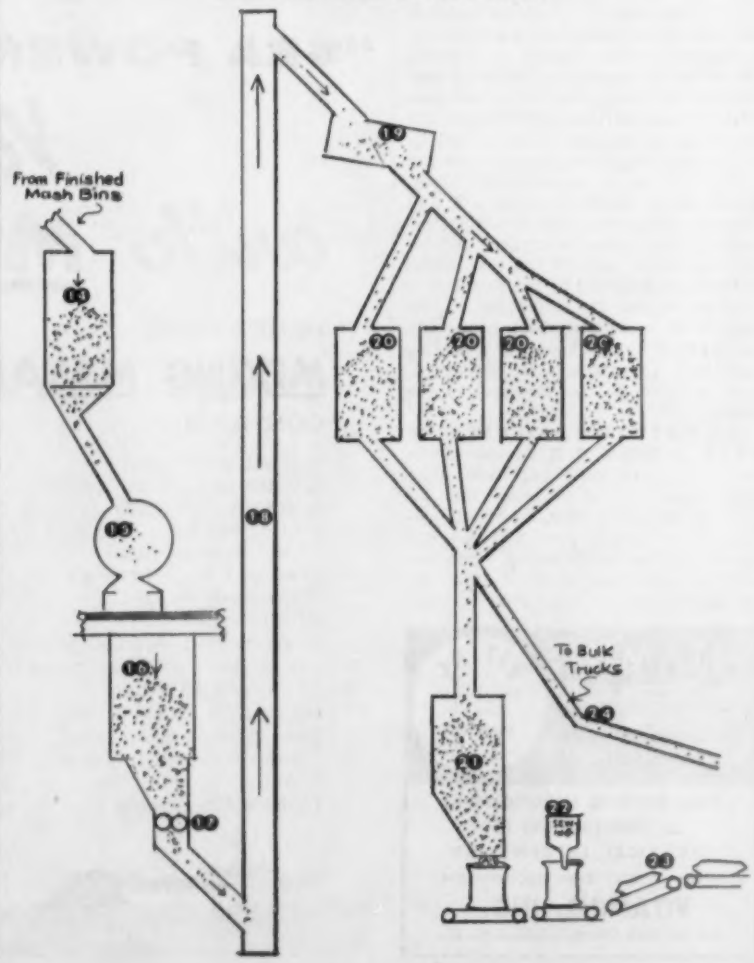
17. Rolls for making crumbles.

18. Crumbles or pellets are moved by bucket elevator to the third floor.

Simplified Sketch of Mill Flow



Pellet and Crumble Production



Vernon Kaler (right), mill manager, is conferring with the checker who is checking out a load of feed.

Feeds are sacked at a rate of 12 100-lb. bags a minute. There are two lines operating—one for mashes and the other for scratch grains and pellets.

Feeds going out in bulk are spouted off the production line and conveyed directly to bulk trucks.

A workman is shown at the crimping roll which crimps grain for formulas calling for crimped oats or barley. From the crimping roll the grain goes to the molasses mixer.

19. Pellet grader for removal of fines.
20. The feeds go into one of four pellet bins.
21. Pellets to be bagged are conveyed to the sacking scale.
22. Sewing machine.
23. Conveyor belt carries sacked pellets to the warehouse for truck loading, or the feed goes down chutes to railroad cars.
24. Bulk pellets go through a conveyor for loading directly into trucks.

Hilltop Laboratories Conducts 3-Day School

MINNEAPOLIS—"Service to crow about" was the theme of the Hilltop Laboratories' poultrymen's training school which was attended by servicemen, dealers and their employees from the upper midwest states.

The three-day school was held at the Andrews Hotel, Minneapolis, and post-mortem work was done at the student diagnostic laboratories located at the company's plant.

Dr. Loren Eames, poultry disease specialist, and the Hilltop veterinary and research staff, including Dr. Ted Korduba, Dr. V. Venkataswami and William Page, bacteriologist, were instructors.

The students were guests of Fred H. Moore, president of Hilltop, at a showing of the film, "Around the World in Eighty Days."

Honeggers' Issues Dealer Publication

FAIRBURY, ILL.—The first issue of the "News Popper" has been produced by Honeggers' & Co. with an October dateline and sent to the company's dealers, company employees and a number of business leaders in Illinois, Iowa and Ohio.

The 12-page issue includes an article by Sam R. Honegger, president, and features on cattle experiment results at the company's research farm, a new accounting building, Hygromycin, laying feeds, "honor roll" dealers, a new advertising program, sales activities and cages vs. floor pens.

The November issue will be a combined publication of dealer news and employee news, which has appeared in the form of the "Honegger Hi-Lites." Mrs. Norma J. Newman is editor of the new publication.

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CEDAR RAPIDS, IOWA

Small Producer Needs Cooperatives to Exist, Poultrymen Advised

LINCOLN, NEB.—"The small poultry producer can only exist if the market for a quality product can be improved through cooperatives."

This statement was made by B. G. Allen, Minnesota Commissioner of Agriculture, in an address before the annual convention of the Nebraska Poultry Improvement Assn. here recently.

"The farmer ought to take the position," he said, "that there are too many middlemen between the consumer and producer, and fight for his rights."

A plan for cooperative marketing was offered by Charles Wilcox, representative of the West Central Grain Cooperative. He said it would be a boost to the state's slipping egg production. Nebraska does not have enough high quality eggs in volume to command a good market and increased prices, he said. He suggested cooperative collection from a number of small producers and then marketing the collection in volume.

Dr. John Adams, new chairman of the University of Nebraska department of poultry husbandry, said Nebraska's poultry industry is at the crossroads where it can take either the path of using locally produced grain for production of chickens and eggs or the course of shipping the feed to other areas which will take the profits from poultry raising.

He said the national outlook is brightened by the prospect of a 40% increase in poultry products by 1975. This will be required just to keep pace with population growth, he said.

F. Z. Beanblossom, extension market specialist, Texas A&M College, suggested that representatives of poultry producers, service businesses and consumers discuss a program for improving the quality of eggs produced in the state.

Dr. L. A. Wilhelm, Quaker Oats Co., Chicago, discussed improved feed management, and Dr. James Gwin, Ralston Purina Co., St. Louis, reviewed prospects for poultry on a national scale.

Roy Brown, Blair, Neb., was named president of the association to succeed Don Williams, Fremont. Other new officers are Arnold Daniel, Fremont, first vice president; Art Huge, Holdrege, second vice president; Dorle Hays, Cozad, treasurer. Doyle H. Free, Lincoln, was named executive secretary for his eighth year, and Lloyd L. Parr, Broken Bow, was elected a director at large for three years.

TO BUILD UNLOADER

LINCOLN, NEB.—A $20,000 railroad car dumper will be built beside the Equity Union Grain Co. elevators here, according to Robert A. Puelz, company president. The dumper will have an eight-cars-per-hour unloading capacity. It is expected to be completed June 1, 1958.

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What's New in Feeding — Putting Research to Work

Roughage Utilization in Steers and Heifers

● C. D. Story and L. E. Washburn, Department of Animal Husbandry, Colorado State University, Fort Collins; Proceedings of Annual Meeting, Western Section, American Society of Animal Production, July, 1957.

The results of an experiment reported by these Colorado workers indicate that green alfalfa has a nutritional value superior to cured alfalfa hay for feeding fattening cattle. The rate of gain and feed efficiency was greater on the green alfalfa than on the cured alfalfa hay, even though the cattle on the green alfalfa consumed less dry matter.

On the basis of the data from this experiment, these researchers postulate that "if the green forage will produce greater weight gains with less dry matter than is the case with cured hays, then it is reasonable to expect greater and more efficient production of beef per acre where green-chopped alfalfa is fed."

COMMENTS:

It is a well-known fact that beef cattle can make very efficient use of all kinds of roughages that are produced on the farm or ranch. In fact, an economical and efficient feeding program for the production of beef cattle is based on the maximum use of good quality roughages and good pasture.

In most areas, these roughages will consist of legume or legume-and-grass hays, grass hays, grass silage, corn silage and/or sorghum silage.

On the other hand, roughages of a very low quality, such as straw, corn stover and poor quality hay, may be more readily available in other areas. Erwin and Roubicek at the University of Arizona used hegari silage and cotton gin trash, two readily available sources of roughage in that area, for feeding growing and fattening steers. No significant differences in rate of gain were found when the ratios between these two sources of roughages were varied. However, a good protein supplement was fed in conjunction with all of the various roughage combinations.

Miller and his co-workers at the New York State College of Agriculture at Cornell University evaluated various roughages in wintering rations for steer calves and mature brood cows. Corn silage, grass silage, mixed hays and combinations of the silages and hays were compared.

These Cornell investigators concluded that "all of the roughages studied are excellent when fed in balanced rations either to growing beef calves or to mature brood cows." Considerable differences in the relative efficiency of the various roughages were observed.

Usually the livestock producer or feeder will produce sufficient amounts of one or more of these various roughages to enable them to be used effectively in his beef cattle enterprise. However, for sound planning and efficient production, the feeder must

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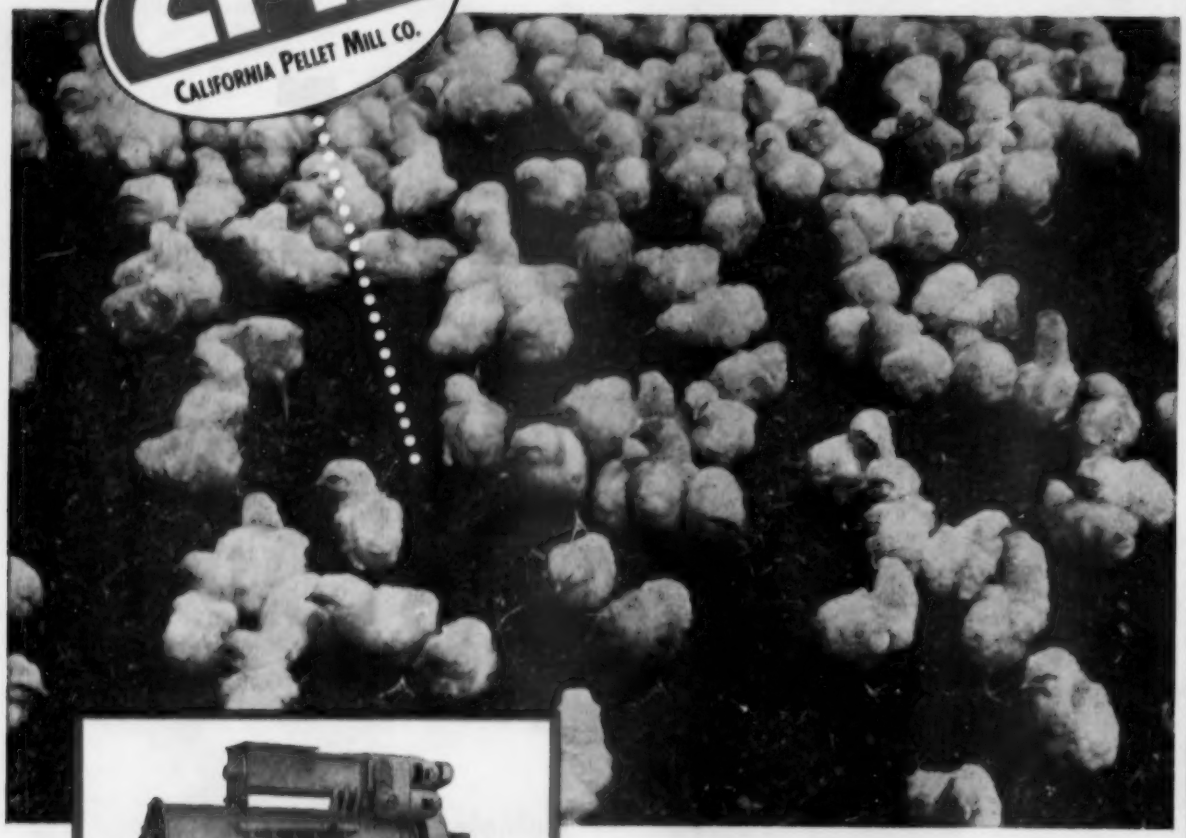

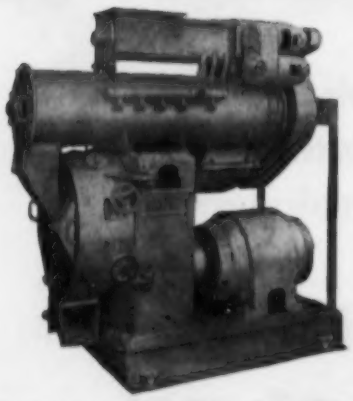

Biggest Producer: The CALIFORNIA 100 hp "Century" Pellet Mill. The quality pellet mill that produces *any* pellet size and shape—at *highest* capacity per hp—at *lowest* cost per ton of pellets. Write for new descriptive bulletin, or call your nearest CPM representative.

—from chicks to full-grown broilers, they just naturally fare better on quality crumbles and pellets from **CALIFORNIA PELLET MILLS**

It's a proven fact: Poultry show a faster growth rate on pellets and crumbles. Feeding efficiency is improved. That means feeding costs are cut where pellets are fed. And pelleting (on CALIFORNIA Pellet Mills) is so economical that it adds much less to the cost of the feed than it provides in extra value—and profits—to the feeder. From this it's easy to see why estimates show that upwards of 60% of all manufactured poultry feeds are pelleted. It's also interesting to note that more CALIFORNIA Pellet Mills are sold today than all other makes combined!

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MANY USERS of 25% antioxidant would be surprised to learn that just a single pound of Koppers Micro-Ground BHT contains as much as 30 TIMES MORE particles of protection than *four* pounds of the 25% BHT with carrier.

Here's why. Over 50% by weight of many 25% BHT mixes will rest on a 60 mesh screen while only 1 to 5% will pass through a 325 mesh. And most of these particles tend to agglomerate with the larger ones.

On the other hand, all Koppers Micro-Ground BHT will pass through a 60 mesh and over 50% will pass through 325 mesh and remain free-flowing. One 60 mesh particle size must be broken into 125 particles to pass through a 325 mesh screen.

What's more important, the fine Koppers micro-ground particles assure you the uniform dispersion you expect from a free-flowing anti-static product. In addition, Koppers BHT takes up only a fourth of the valuable storage space compared to the 25% BHT, and it reduces handling.

So standardize on Koppers Micro-Ground BHT for your feeds. It does a better job of stabilizing vitamins . . . fighting oxidation of added fats . . . improving utilization of carotenoid pigments . . . preserving Vitamin E.

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be aware of the relative feeding value of the various roughages for the different sizes and ages of the animals in his production unit.

As Miller and his fellow researchers pointed out, the more efficient and nutritious roughages gave comparable results when fed in smaller amounts or with no supplemental grain. Consequently, the feeding of better or top quality roughages can result in very definite savings from the standpoint of the amount of grain and roughages required to produce a unit of gain.

However, both good quality roughages and grains must be properly and adequately supplemented with proteins, minerals, vitamins and other necessary factors in order to produce the rapid and efficient gains which the feeder must secure in order to make his cattle enterprise a profitable one.

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week-a-month protective feeding
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BOOSTS EGG PRODUCTION
COMPLETE DETAILS ON PAGES 41-44 D

Cotton Producers Announce Opening Of 2 Feed Mills

FLOWERY BRANCH, GA. — The grand opening of the new Cotton Producers Assn. feed mill will be held here Nov. 15, J. Julian Baker, association official, has announced.

The second new mill, at Guntersville, Ala., will have its "open house" about 60 days later, he added.

Both mills are owned by the association. They will be operated under the name of Cooperative Mills and will manufacture a complete line of open formula dairy, poultry and livestock feeds.

The mills, of reinforced concrete construction, are completely fireproof, Mr. Baker said. Each has a capacity of approximately 100,000 tons annually, which can be increased "substantially" by adding storage and manufacturing equipment. Provision for expansion was included in the original plans.

Warehouses containing 20,000 sq. ft. of floor space are attached to both mills with adequate truck facilities for receiving raw materials, and for storage of finished feeds. Both are located on rail sidings.

Four 120-ft. grain storage tanks, with a capacity of 200 000 bu. of grain adjoin the Guntersville mill. This grain receiving and storage location will serve both the Guntersville and Flowery Branch mills for the bulk of their raw materials.

Gulf States Contruction, Inc., Atlanta, designed and constructed both mills. The Guntersville mill was the scene of labor disorders last summer when two men were killed and six others wounded in a gun battle. Lawsuits as a result of the dispute are still pending in court.

E. L. Brashear

HELM SALES MANAGER — E. L. Brashear has been named sales manager of Helm Manufacturing Co., Ft. Worth. The appointment was announced by A. C. Helm, president. Mr. Brashear has spent 13 years in sales of feed mill equipment, and before his sales work spent many years in design and layout of feed mills. He served as superintendent for the Bewley Feed Mills for about 20 years. Mr. Helm said the company is engaged in a full line of production and expansion of the firm's line of mill machinery.

NORMAN S. WEST DIES

MODESTO, CAL. — Norman S. West, head of the J. S. West Milling Co., Modesto, died unexpectedly recently. He was in the midst of making plans for expansion of the company at the time of his death. The plant had been partially destroyed by fire in June.

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Hubbard builds your profits with complete merchandising programs, colorful counter displays, special premium promotions, bag and tag service.

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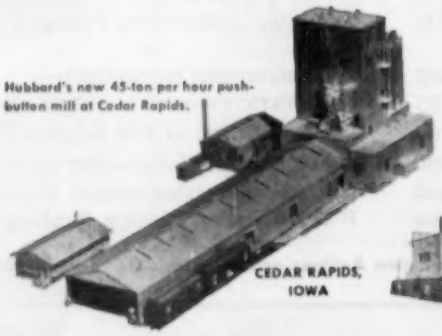
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Leading Feed Manufacturer Adds Fat to 90% of Total Feed Production!

Honeggers' carry on continuous experimental programs at firm's Research Farm near Forrest, Illinois. Shown here in 'Battery Room', left to right, are: Max Smith, Experimental Farm Supervisor; Dr. Logan T. Wilson, Nutritionist; and Erwin C. Wascher, Vice-Pres. and Dir. of Research.

Honeggers', well-known feed manufacturer and operator of one of the nation's largest and most successful hatcheries, required only one thorough experiment to prove the extensive benefits of adding fat to their popular "Big H" feeds.

Today, this progressive manufacturer, with mills in three midwest states, uses fat in a good 90% of their total feed production—which includes almost 80% of the company's widely-used brands of chick, hog and cattle feeds.

Scientific use of fat is a major factor in Honeggers' "Hyper Energizer" feed-improvement process. The company's continuing research has repeatedly confirmed the value of adding fat to many types of feed.

Fat increases feed efficiency more than any other single ingredient. It provides 125% more energy value than pure carbohydrates or protein—and, in poultry feed, results in a better finish on the birds. Further, as is well known, fat reduces dustiness in feed, improves appearance and palatability and increases capacity of pellet mills.

As for mixing and applying, Honeggers'—one of the first to use fat in feed extensively—finds no problem at all. The fat is brought in by tank truck from nearby suppliers. It is stored in bulk tanks, and sprayed directly on the feed in the mixers.

(Air view, Honeggers' mill—Fairbury, Ill.)

Production is no problem in Honeggers' modern mills. Fat is simply sprayed on feed in mixer.

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NEW TENNESSEE OFFICERS—New officers were elected at the recent annual meeting of the Tennessee Poultry & Egg Federation at Knoxville. Seated, left to right, are M. V. Williams, Friendship, first vice president; George M. Blackburn, Kingston Springs, president; Fred Pinckard, Chattanooga, second vice president. Standing, left to right, are W. T. Howerton, Memphis, retiring president, and Dr. O. E. Goff, head of the poultry department, University of Tennessee, Knoxville, reelected secretary-treasurer.

Speaker Says Changes On Farm Benefit All

PARK RIVER, N.D.—The fact that dynamic capitalism has made spectacular gains in the family farming business of this country could be the greatest thing that ever happened to America, a county fair audience at Park River, N.D., was told recently by a Minneapolis grain man.

"Politically, as well as economically, we all stand to gain from this new leadership of successful enterprises on the farms," said Ron Kennedy, vice president of F. H. Peavey & Co.

Historically, he said, the freeholders on the land have always had to be eliminated before any despotic system could gain much headway in a free society. This was true in ancient Rome, as in modern Russia.

"Therefore, it would seem in the best interests of all of us," he said, "that our land be in increasingly strong and free hands and this is precisely what is taking place—today two fifths of American farmers produce seven eighths of the farm output."

While it requires some $14,000 of capital investment, Mr. Kennedy said, to provide one job in U.S. industry as a whole, it takes about four times that amount to provide one job in a typically good farming enterprise.

Thus farming, 97% of which, according to the USDA, is family-operated in this country, has become so highly capitalized that every management decision in the farm enterprise is critical.

Mr. Kennedy said middlemen like his own firm, rather than "standing between the farmer and the consumer," as has been charged, actually are vying with one another in their efforts to help the farm businessman make money and stay strong.

SELLS FEED STORE

WALLA WALLA, WASH.—W. J. (Gus) Long, former owner and operator of the Feed Bin, has recently opened an Eastgate pet and garden store here. He was with the Walla Walla Grain Growers until 1939, at which time he opened the Feed Bin in partnership with O. Conway Adams. He bought out Mr. Adams in 1947 and continued Feed Bin operations until he sold it recently to launch his new venture.

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ADVANCE CUSTOM MILLS
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Maybe there were good grains and supplements to begin with—and the mixing perfect, but if it wasn't a *Blue Streak Granular Grind*, then the feed may be floury. If so, then the feeder loses in bulk and nutritional wastes . . . all farmers know this.

They know too that you get *Granular Grind* only when Prater's patented *Triple Reduction* grinding principle is used—available only with Prater's *Blue Streak Mills*. All custom millers make more profits when they use Prater Blue Streak Advance Custom Mills.

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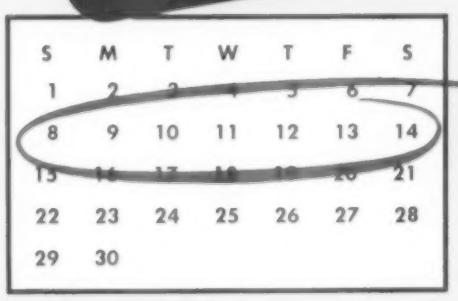
furazolidone
nf-180



WEEK-A-MONTH
protective feeding

knocks out disease

boosts egg production

the reason . . .

nf-180

furazolidone controls than any other diseas

New WEEK-A-MONTH protective feeding plan stops troubles before they start . . . frees birds from the constant disease fight

Poultrymen have tried it . . . and it works. Keeps flocks ahead of disease troubles and laying slumps.

A 5-7 day feeding of nf-180 (furazolidone) at 2 lbs. per ton gives birds month-long protection against disease build-up. Holds off troubles . . . keeps egg production humming. The plan pays because furazolidone keeps disease down and egg checks up. One egg more per hen per month pays the cost . . . all extra eggs are profit.

Better than antibiotics, sulfas and other drugs, furazolidone controls a wider range of diseases and secondary bacterial invaders. Even where disease organisms have become resistant to so-called "wonder drugs," furazolidone knocks out disease by *killing bacteria*. In years of successful use, no significant resistance to furazolidone has developed.

Improves feed conversion

By freeing birds from the constant disease fight, furazolidone lets layers utilize more of their feed for egg production. Feed conversion improves . . . eggs per pound of feed go up . . . egg production costs go down.

Boosts egg production

Year-around sustained laying piles up more profits than spurt and slump production. That's why it's important to keep hens healthy. Vigorous, thrifty birds lay more eggs per month . . . on less feed . . . have a longer laying life. Death losses are lower. Every pullet housed returns more eggs for more months than *unprotected* birds.

Field experience has shown that week-a-month protective feeding of furazolidone-fortified feeds gives these benefits:

1. Helps mature pullets start laying at a profitable level sooner
2. Increases and maintains a higher percentage of egg production
3. Prevents costly laying slumps
4. Lengthens productive laying season
5. Lowers laying flock mortality
6. More eggs on less feed

A BIRD'S own body defenses may be able to fight one disease or one stress at a time. But bacteria and nature usually aren't that accommodating. Birds weakened by one disease fall easy prey to other bacteria. Laying slumps . . . even death losses . . . often follow. The illustration above shows what happens . . . why you stay out of trouble . . . when you feed your birds a high-level feed containing furazolidone 5 to 7 days every month. *Furazolidone keeps disease below the danger level.* It cuts down disease worries and gets birds over those rough spots.

ls more flock troubles ase fighter today!

Here's why furazolidone can outperform leading antibiotics in poultry feeds.

DRUG	Growth Stimulation	Coccidiosis in Chickens	Pullorum	Typhoid	Para-typhoid	C.R.D. Sinusitis	Blue Comb	Hexamitiasis	Synovitis	Ulcerative Enteritis (Quail Disease)	Blackhead	Stress Periods
nf-180 furazolidone Level (grams)	YES 7½-10	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100-200	YES P-50 T-100	YES P-50 T-100	YES P-100 T-100	YES P-50-100 T-100 200	YES P-50 T-100	YES P-100 T-150	YES P-50 T-100
Chlortetracycline Level (grams)	YES 7-10	NO	NO	NO	NO	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100	YES P-100 T-200	NO	NO	YES P-50 T-100
Oxytetracycline Level (grams)	YES 7-10	NO	NO	NO	NO	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100	YES P-100 T-200	NO	NO	YES 50
Bacitracin Level (grams)	YES 7-10	NO	NO	NO	NO	YES P-50 T-100	YES P-50 T-100	NO	NO	NO	NO	YES P-50 T-100
Penicillin and Streptomycin Level (grams)	YES 2-5 (for pencillin)	NO	NO	NO	NO	YES 75 Strep 25 Penicillin	YES 75 Strep 25 Penicillin	YES 75 Strep 25 Penicillin	NO	NO	NO	NO
Penicillin Level (grams)	YES 2-5	NO	NO	NO	NO	YES T-100	YES T-100	NO	NO	NO	NO	NO
Penicillin and Bacitracin 37½B plus 12½P Level (grams)	YES 5 Bacitracin 1 Penicillin	NO	NO	NO	NO	YES P-50	YES P-50	NO	NO	NO	NO	NO

KEY: P — number of grams for prevention of disease on a continuous feeding basis
T — number of grams for treatment of disease

THE diseases listed above cause costly losses in poultry flocks everywhere. When any one of them is diagnosed, furazolidone is often recommended as the drug of choice. But by the time a diagnosis can be made much of the damage has already been done. Sound reason then to practice protective feeding of the one drug (furazolidone) that will prevent more of these diseases than any other drug.

What's more, the sub-clinical, hard-to-diagnose infections that flare up in the wake of management stresses are more effectively prevented by furazolidone.

Scientific research has proved these claims. Ample evidence that *furazolidone* is truly the one drug that controls more poultry diseases than any other drug.

Practical Poultrymen Report:

"Field Test Proves Difference"

This poultryman with 4000 caged layers found his birds unthrifty and laying only 45% at 16 months of age, June '57. He heard what furazolidone had done for other flocks and decided to test it. He tried the 2 lb. *nf-180* level per ton of feed on 1200 birds. By the 7th day, production had gone up to 667 eggs per day. While these birds increased to 55% production, the other 2800 slipped off to 42%, making a 13% difference in favor of the furazolidone-fed birds.

"Pulled Out of Slump"

A Texas flock of 2700 meat-type breeder hens had been laying for 5 months. Production was at 40% when they were put on a feed containing the 2-lb. level of *nf-180* (furzolidone). Production went right up to 65% and was maintained throughout the laying season with periodic feedings of furazolidone.

"Improved Hot Weather Production"

Hot weather stress was affecting this flock of 1100 meat-type breeders. They came into production in June, went up to 65% production and a few were being lost due to the 90-degree heat. Right after blood-testing, (26 weeks) the flock was put on a "protective feeding" plan of 2 lbs. *nf-180* (furazolidone) per ton for 5 days every 2 weeks. Production increased throughout the hot summer and heat losses were nil.

"Helped Lagging Layers"

In a Texas broiler area, three breeder flocks housed in September '56 had been laying 7 months. Production began to lag as hot weather came on in May '57. Furazolidone-fortified feed perked up all three flocks. Flock A — 1000 birds — was laying around 235 dozen eggs per week. Furazolidone was fed the first week of June and the next week production was up to 278 dozen. Flock B — 1350 birds — was laying 316 dozen per week, got furazolidone 1 week and shortly production reached 355 dozen. Flock C — 1200 birds — was laying 360 dozen per week, and production after the furazolidone feeding ran 378, 384, 384 and 400 dozen eggs per week the month following.

"Lengthened Laying Life"

This poultryman was about to sell his 1400 hybrid layers averaging 30% after 12 months. Instead, the birds were put on furazolidone periodic feeding plan. Within 30 days these birds were up to 75% production and maintained that level for about 4 months until they were sold.

"Higher Production Maintained"

A 1500-pullet laying flock was running 900 eggs a day (60%). *nf-180* at 2 lb. per ton of complete feed was fed for one week. Within a week, production had increased to 1100 eggs (73.3%). They maintained an average improved production of 6.5% over several months of week-a-month furazolidone feeding.

Ask your feedman for feed fortified with furazolidone

Your feedman can supply you with furazolidone in feeds two ways . . . with a ready-mixed "high-level" or booster feed (.011% furazolidone on tag) or by custom-mixing 2 lbs. nf-180 (furazolidone) per ton in an all-mash ration.

It's important to use medications at correct levels. Be sure furazolidone is in the feed at the right level and get enough feed to do the job. To get a week's supply of furazolidone-fortified feed, order for:

Light breeds - - 150 lbs. complete feed per 100 birds

Heavy breeds - - 175 lbs. complete feed per 100 birds

For flocks of several thousand birds, it may be desirable to figure exact feed requirements from the chart at right.

Inexpensive and Completely Safe. Furazolidone "week-a-month protective feeding" plan will pay for itself and then some. *One more egg per hen per month* pays for the medication. *All extra eggs are profit.* Furazolidone is completely safe for birds of all ages . . . not toxic to birds and animals.

Approximate Number of Pounds of Feed Required Daily per 100 birds According to Size of Bird and Number of Eggs Laid per Day per 100 birds

	BODY WEIGHT, POUNDS				
	3	4	5	6	7
Production	Feed required per 100 birds per day, pounds				
40%	18.5	21.2	23.6	25.9	28.0
50%	19.9	22.6	25.0	27.3	29.4
60%	21.3	24.0	26.4	28.7	30.8
70%	22.7	25.4	27.8	30.1	32.2
80%	24.2	26.9	29.3	31.6	33.7
90%	25.6	28.3	30.7	33.0	35.1

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PELLETING RATIONS FOR SWINE

By Dr. W. E. Dinusson
North Dakota Agricultural College

EDITOR'S NOTE: There has been a good deal of discussion of increased hog production in the South and also in some of the areas where sorghum grain output has increased greatly. Recently, as a result of research at North Dakota Agricultural College, Fargo, more attention has been paid to possibilities for greater hog production in North Dakota, using barley-based feed pellets which contain both the grain and supplement. A news story in Feedstuffs Oct. 26 tells of this development, and the following article reviews North Dakota research on the use of pelleted rations containing barley and other grains. The author is Dr. W. E. Dinusson, associate animal husbandman and animal nutritionist at NDAC. He points out, among other things, that, because barley has a higher protein content than corn, the supplement to be used with the barley in the pellets should be specially formulated. This article is from a bulletin published by the North Dakota Experiment Station.

Two main types or classes of barley are grown in the U.S., malting and feed. This classification is very loose, and in practice "feed" barley is any barley not accepted by the malting industry, regardless of variety. Thus, there is considerable variation in the quality of barley used in the feed industry.

High Protein Desirable

West coast barley is usually lower in protein than that produced in the north central states, and the malting varieties are often lower in protein than the feed varieties. Therefore, if the barley is to be used for feeding, a farmer should grow a high yielding, high protein variety. However, much of the barley grown for malting, although unsuited for the malting industry, makes excellent feed when properly prepared and supplemented.

Barley has a legal weight of 48 lb. per bushel. At that weight the hulls form about 12 to 15% of the barley with a crude fiber content of 5 to 6%. Lighter, thinner kerneled barley has a proportionately greater hull content and a higher fiber content.

Corn, yellow No. 2, is the standard with which all energy feeds are compared. Average analysis from the tables from Morrison's Feeds and Feeding 22nd edition show barley to contain about 97% as much total digestible nutrients (TDN), 40% more protein, about twice as much phosphorus, three times as much calcium and, unfortunately, about two and one-half times as much crude fiber as corn. Thus, the additional protein offsets the slightly lower TDN of the barley.

Grind Barley For Swine

Barley should be ground for swine. Grinding increases the feeding value up to 24%, with an average of about 18%. Grinding does not entirely overcome the harmful effect of the hull, and pigs waste feed by rooting the feed out of the feeder in an attempt to sort the hull from the groat. The feed consumption of the meal is also reduced because of unpalatability and bulkiness. Fine grinding of barley stops the sorting of feed but does not always reduce the waste because the resulting dustiness reduces palatability and the bulkiness is further increased.

In 1950 the animal husbandry department at North Dakota Agricultural College began experiments to search for ways to overcome the harmful effect of the fiber and improve the efficiency of utilization of barley for swine rations.

In the first two experiments pigs fed a complete ration, pulverized and pelleted, based on barley, gained 12 to 14% faster on 8 to 17% less feed as compared with identical rations fed in meal form. The pigs on the pelleted barley rations gained 10 to 14% faster than the pigs fed corn rations either pelleted or ground. The feed efficiency was similar. Several additional experiments have confirmed these early findings.

The rates of gain are not always greater on pelleted barley than corn, but compare very favorably. If the

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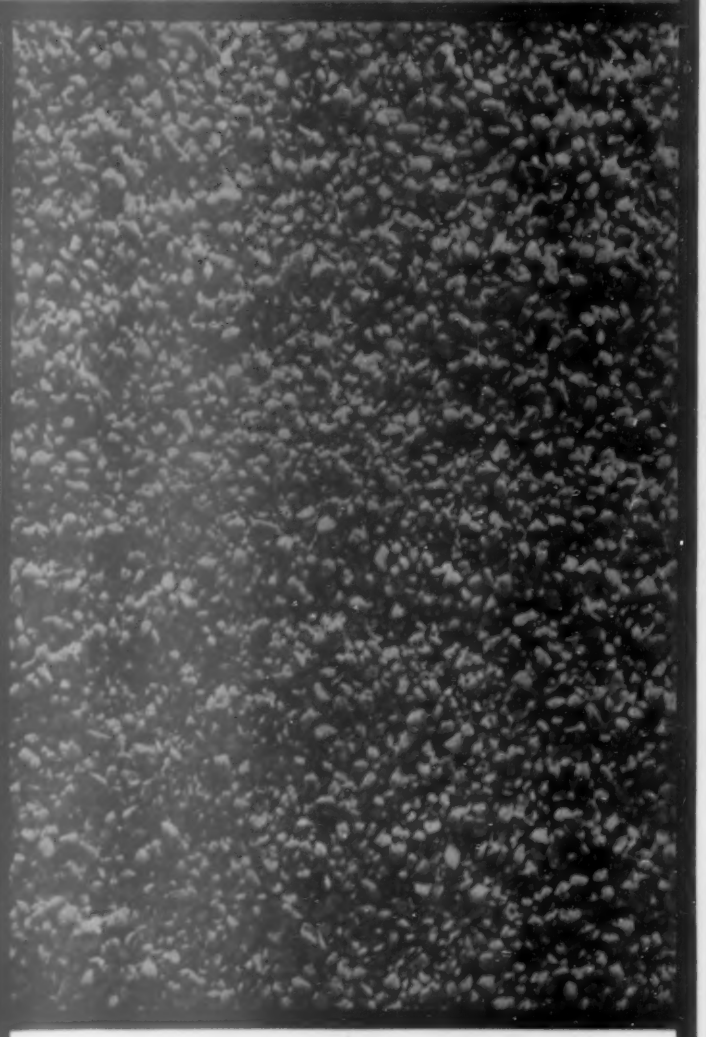

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barley rations are properly balanced, pulverized and pelleted, barley rations are directly competitive with similar corn rations.

Feed efficiencies of both corn and pelleted barley rations have ranged from 300 to 365 lb. of feed per 100 lb. of gain and have averaged about 330 pounds. Feed efficiency varied with type and breed of pig, season and quality of grain. These estimates are averages for pigs from 40 to 200 lb. in weight and based on research at the NDAC Experiment Station.

Pelleting Has Advantages

Pelleting of barley, oats and other grains with hulls, except proso, has several advantages. First, pulverizing and pelleting those grains minimize the effect of the fiber by increasing the palatability, reducing the bulkiness and reducing the waste.

The reduction in bulkiness or increasing the density has a further advantage in that, research at this station indicates, if given a chance, pigs eat on the basis of energy content rather than on total pounds of feed. It has been observed that pigs fed a pelleted barley ration eat more pounds of feed per day than those on corn rations or barley rations in the meal form. This usually results in a more rapid gain and a more efficient gain.

Oats, particularly good oats weighing 34 to 40 lb. per bushel (legal weight 32 lb. per bushel), respond to pelleting the same as barley. The hull content forms about 20 to 25% of the oats with a crude fiber content of 10 to 12%. This means that the energy (TDN) content is slightly lower per pound and this increases the pounds of feed required per pound of gain.

Research at NDAC indicates that oats as one third of the grain in the ration are equal to barley and as the only grain for the young growing pig are worth more than for fattening pigs. Pigs getting pelleted oat rations from about weaning to 70 to 80 lb. in weight outgained those on pelleted barley or corn rations, but lost the advantages of weights of from 100 to 200 lb. However, oats can be used to fatten swine up to 200 lb., and this is economical when the price per pound of oats is slightly less than that of barley.

Unfortunately, proso (hog millet) has not responded to pelleting as have the other grains. This problem is receiving attention and proso rations are not recommended for pelleting, as yet. Additional research will be needed to find out how best to use proso for pelleting swine rations. Proso is an excellent grain when fed in the meal form.

Screenings Not Recommended

The use of screenings is not recommended in pelleted swine rations. A good grade of screenings, weighing 48 lb. per bushel and consisting mainly of pigeon grass, broken kernels of cereal grains, wild buckwheat and a small percentage of the small

Morris C. Keller

NAMED REPESENTATIVE—Morris C. Keller, president, South West Poultry Specialties, Inc., Dallas, Texas, has been named manufacturer's representative for Associated Feed Products, Inc., South St. Paul, Minn. Arthur L. Anderson, sales manager of the Minnesota firm, made the announcement. South West Poultry Specialties will represent Associated in the distribution of condensed milk supplements, milk replacers, special formulas and mechanical departments in southern sales territories.

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seeds, such as mustard, pigweed, etc., was used in a pelleted ration and the experimental pigs refused to eat the pellets and actually lost weight. Smaller percentages of screenings with grain tend to reduce palatability and to reduce feed efficiency.

One type of screenings was used which showed promise—"mill oats." This screenings byproduct was consumed by the pigs in large quantities with fair gains, but feed efficiency was poor and on a dollar and cents basis was not equal to a barley ration even though the price per ton of the mill oats was only about one-half that of barley. This preliminary research suggests that screenings do not make a "cheap" feed for growing fattening swine.

Improves Thin Barley

The problem with thin, light barley, or even with barley "needles," has been investigated. Research shows that barley weighing 37 lb. per bushel is worth about 90% the value of 46 to 48 lb. barley. When this thin barley is pulverized and pelleted in complete rations, the pigs tend to eat enough more to make up for the lower energy and the rates of gain are similar to those on plump barley. Feed efficiency is affected, and it takes about 10% more feed per pound of gain of the light compared with the plump barley. In fact, research shows that pelleting increases the value of the thin barley to a greater extent than that of plump barley but, of course, not up to the level of plump barley rations.

Balancing a ration based on barley

(Continued on page 50)

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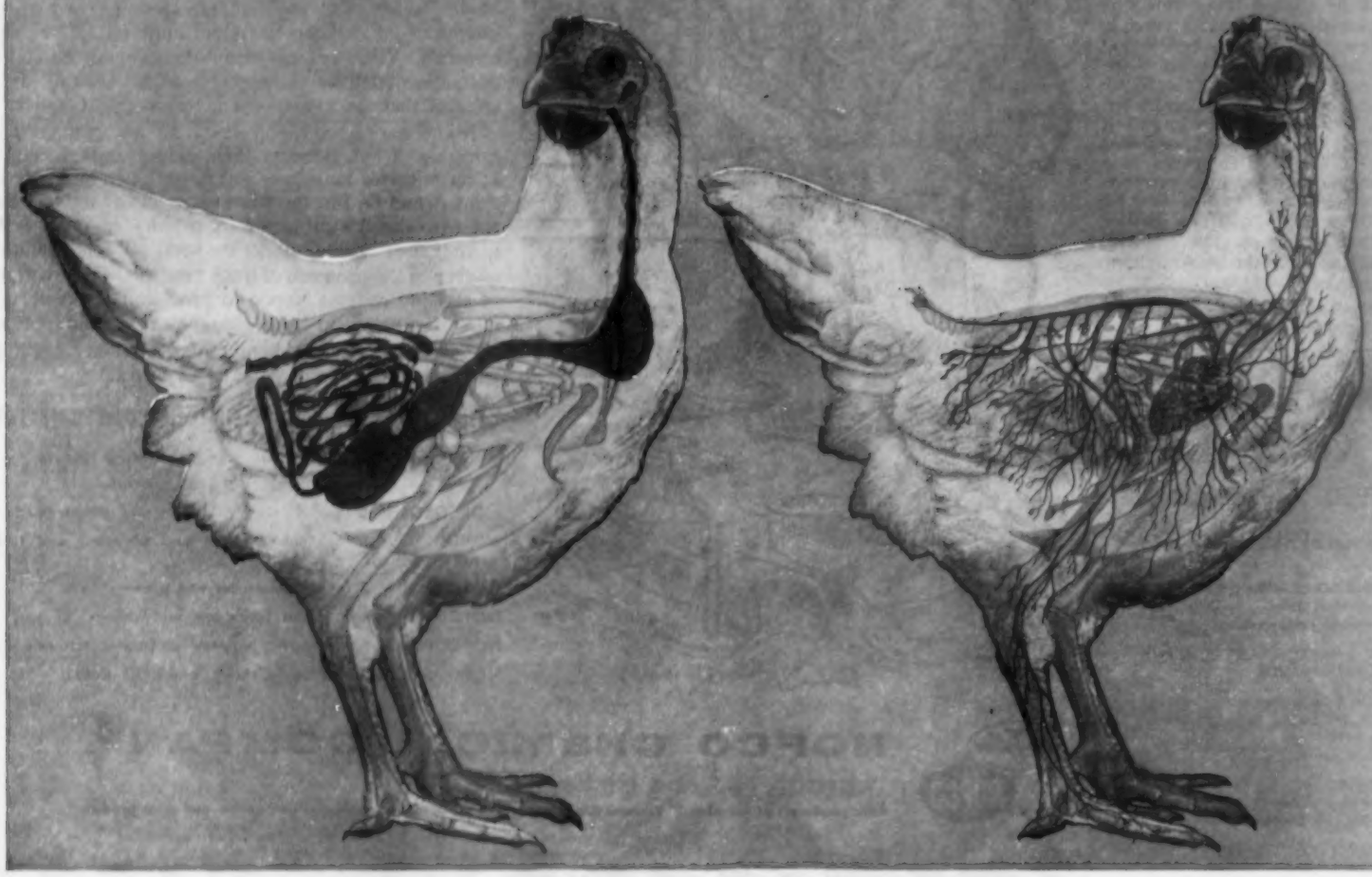

What is it? PRO-STREP is a new and superior high-level feed supplement incorporating penicillin with streptomycin. Each pound provides a combination of 5 grams of procaine penicillin and 15 grams of streptomycin sulfate.

While the U. S. patent covering the use of penicillin in feeds attests to Merck's acknowledged leadership in the nutritional use of antibiotics, Merck research is by no means resting on its laurels. In fact, PRO-STREP is objective evidence of our determination to come up with more and better antibiotic feed supplements.

PRO-STREP is recommended for mixing in feeds at the rate of five pounds per ton. It is non-toxic, compatible with other micro-ingredients, and leaves no tissue residues.

When is it used? PRO-STREP may be used to prevent or control disease in poultry and swine. Administered during and before periods of stress (vaccination, castration, hormonizing, debeaking, chilling, moving, or over-heating), it guards animals against infection. If disease does break out, PRO-STREP is an effective aid in controlling C.R.D. and non-specific enteritis in chickens, bluecomb in turkeys, and "necro" in swine. Use PRO-STREP to promote growth in both broilers and swine.

Why is PRO-STREP so effective? Penicillin and streptomycin each exerts specific nutritional and antibacterial actions. PRO-STREP contains effective streptomycin and rapid- and prolonged-acting penicillin (which many authorities agree is the best antibiotic for growth-promotion in poultry).

In PRO-STREP, both enhance each other's antibacterial effect through synergism—giving an effect greater than either antibiotic alone.

Furthermore, because penicillin and streptomycin in proper concentration are bactericidal and not just bacteriostatic, PRO-STREP can kill germs outright. This double-teaming action helps minimize the emergence of resistant bacteria, a development that often handicaps the usefulness of antibiotics used one at a time.

Does PRO-STREP possess "broad-spectrum" activity? Yes. Penicillin is active principally against gram-positive, and streptomycin against gram-negative bacteria. In PRO-STREP, the bacterial spectrum of each antibiotic complements the other to produce a remarkably broad range of usefulness. It is important to note that PRO-STREP is extremely effective against a wide range of the bacteria which are economically important in poultry and swine production. This gives PRO-STREP as great a range of efficacy as any other broad-spectrum antibiotic feed supplement.

What is its mode of action? Because it contains two different antibiotics, PRO-STREP offers benefits not heretofore possible. Specifically, PRO-STREP provides both a systemic action and a local action. Streptomycin, which is lethal to gram-negative bacteria, mainly remains in the intestines, where gram-negative

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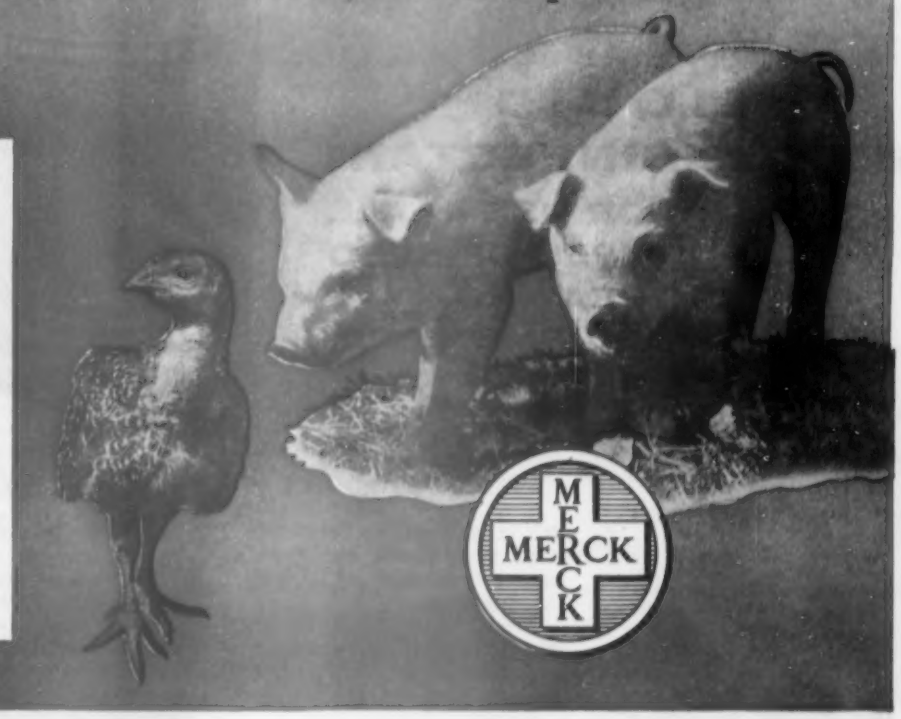

Most of the streptomycin stays in the bird's intestinal tract where it exerts a continuous action against the wide variety of gram-negative organisms found there.

Penicillin is rapidly absorbed from the intestinal tract and is carried by the blood stream to every part of the bird's body to attack most harmful gram-positive germs.

Only PRO-STREP has demonstrated in field tests the many benefits for swine, chickens and turkeys shown here.

©PRO-STREP is the Merck brand of Procaine Penicillin and Streptomycin Sulfate.

organisms are most commonly found, and exerts a prolonged antibacterial action. Most of the penicillin, on the other hand, is quickly absorbed from the intestines and exerts its antibacterial action throughout the body. Thus you get multiple benefits from PRO-STREP—dual germ-fighting action, and dual growth-promoting action.

Who has used it? Merck has had PRO-STREP under investigation for more than two years . . . in its laboratories and experimental farm, in commercial trials and with many leading feed manufacturers. As the result of all this exhaustive testing with broilers, layers, turkeys, and swine, it is possible to state that PRO-STREP can:

1. reduce mortality from C.R.D.
2. hasten recovery from C.R.D.
3. increase growth rates in chickens, turkeys, and swine
4. increase feed utilization for growth
5. protect against bluecomb
6. control bluecomb
7. maintain feed intake following periods of stress and disease
8. control infectious sinusitis
9. reduce "early mortality"
10. cure bluecomb of turkeys and nonspecific enteritis of chickens
11. reduce mortality from swine enteritis ("necro")

How should PRO-STREP be fed? In broiler mashes, PRO-STREP should be fed continuously for the first 10 days; and for 3 to 5 days during or after periods of stress. In other poultry feeds, PRO-STREP should be used for 3 days of each week, or continuously, to control or prevent outbreaks of disease.

For the prevention of "necro" (infectious enteritis) in swine, PRO-STREP should be fed continuously until the pigs reach 50-75 pounds. For infected pigs, PRO-STREP should be fed for 4 to 5 days or until symptoms disappear.

Where can I get it? Merck ships PRO-STREP in 50-pound multi-wall paper bags from Teterboro, N. J.; St. Louis, Mo.; and Los Angeles, Calif.

PRO-STREP'—a product of MERCK

MERCK & CO., INC.

CHEMICAL DIVISION

RAHWAY, NEW JERSEY

and taking advantage of the higher protein value of the barley create a problem. Most commercial mixed supplements are formulated primarily for use with corn. To make a 13.5% protein ration based on 9% protein corn requires about 85 lb. of corn and 15 lb. of a 40% supplement. To get a 13.5% protein ration based on barley (12%) requires about 94 lb. of barley and 6 lb. of the 40% supplement. Thus, less than one-half as much protein supplement is needed for the barley ration as the corn ration. If the vitamin and mineral additions were added to the supplement in amounts such that 15 lb. per hundred would meet requirements of the swine, then adding only 6 lb. per hundred in the barley ration would mean less than one half of the vitamin and mineral requirements was added.

In short, for best and most economical results, a supplement should be formulated especially for barley. Because of the higher vitamin fortifications that are necessary, such a supplement will be slightly more expensive per ton but will result in a cheaper barley ration because so much less will need to be added to meet all requirements.

Another problem exists in this balancing of protein. The North Dakota Agricultural Experiment Station is experimenting to find the best supplement or combination of supplements, or even amino acid additions, which will give the cheapest and best results. With the present knowledge it is apparent that lysine is the limiting essential amino acid of barley. The supplements which are good in this respect are blood meal, fish meal, meat scraps and possibly soybean oil meal. Linseed oil meal and cottonseed oil meal are lacking in lysine. Because only 1½% protein addition is needed (13.5 minus 12 equals 1.5) when barley is used, it is more difficult to find a supplement which will adequately supply lysine when small amounts are added. This is not true in corn rations which need 4.5% protein additions (13.5 minus 9 equals 4.5).

Only supplements high in lysine and of good protein quality should be used for barley rations. Additional research will answer the question and give a formula which will be efficient for use with barley and probably also for oat rations.

Fine Grinding Advised

Other questions which have come up in regard to pelleted rations include the one of "binders" for pelleting. Binders, such as sodium bentonite, should not be necessary. Firm pellets which do not crumble to meal can be made without any binders.

Fineness of grinding of barley for pelleting is another problem. At present it seems advisable to pulverize the barley before pelleting. This fine grinding minimizes the effect of the fiber.

Another question is that of adding molasses. Molasses can be added up to 5%. It does assist in pelleting. None of the nitrogen in molasses is in the form of protein. Whenever a pound of molasses is substituted for a pound of barley there is a loss of .12 lb. of protein which must be added from some other source. Because the cost per pound of molasses is usually higher than barley, and increases the cost of additional protein, this has minimized the value of the addition of molasses.

Research to date at NDAC has indicated that the increased efficiency does not quite pay for the added cost of pelleting corn rations.

Denver W. Haase

PROMOTED BY CONKEY—Denver W. Haase has been promoted to district sales manager of Iowa for Conkey Feeds, according to R. C. Logan, sales manager of the G. E. Conkey Co., Nebraska City, Neb. In his new position, Mr. Haase will be in charge of five Conkey salesmen in the Iowa division. He joined the company in 1952.

K-State Receives Stored Products Research Grants

MANHATTAN, KANSAS—Protection of stored products and their users will be studied under three research grants going to the department of entomology at Kansas State College. Nearly $30,000 has been appropriated for these studies during the current year.

The largest grant, $12,420, is from the U.S. Public Health Service for a program of research into environmental influences on insects in stored products. D. A. Wilbur is in charge of the investigations.

Frontier Chemical Co., Wichita, has provided a grant of $10,000 to support studies of the significance of toxicant absorption in relation to the effectiveness of grain fumigants. C. C. Roan, Lallan Rai, and Mr. Wilbur are coworkers in this research.

Factors affecting toxicity of certain fumigants for stored grain insect control will be examined in a program sponsored by Diamond Alkali Co. Working on the study will be Mr. Wilbur, whose specialty is stored grain insects, and Philip K. Harein.

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FOR USE IN ALL TYPES OF SEED TREATING EQUIPMENT

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IN MIST-TYPE TREATERS
Liquid PANOGEN, used direct, is especially suited to this spray method of application. Since it doesn't "blot", it spreads more readily and gives more uniform coverage.

IN SLURRY AND DUST TREATERS
The same ready-mixed liquid PANOGEN used in liquid type treaters (above) is applied undiluted to seed in slurry and dust treaters by use of inexpensive easy-to-install PANOGEN Conversion Kits. PANOGEN also mixes readily with water for use in slurry treaters without Conversion Kit.

FOR HOME TREATING
You can now supply your customers with PANOGEN in small bottles with dispenser for treating those "extra" bushels with shovel, grain auger, home-made drum mixer, or cement mixer.

● You can PANOGEN PROCESS seed with ready-to-use PANOGEN no matter what type of equipment you now own.

Ready-to-use liquid PANOGEN eliminates such problems as mixing, measuring, freezing, fire hazards, corrosion, or settling-out.

Owners of dust and slurry treaters can enjoy the advantages of ready-mixed PANOGEN by installing inexpensive conversion units. PANOGEN Distributors also supply dual reservoirs for simultaneous application of PANOGEN and DRINOX liquid insecticide . . . also pumps and accessories which automatically deliver the liquid to your treater.

Since its development 18 years ago, liquid PANOGEN has conclusively established its superiority as a seed treatment. It is used in agricultural areas throughout the world and is the *only* liquid seed disinfectant widely approved by agricultural colleges and experiment stations.

Your customers' seed is a precious asset. Take no chances by using a treatment that is not recommended by your agricultural college. *Panogenize* seed for safety, convenience, and greater customer satisfaction.

DRINOX (left) is the new liquid insecticide seed treatment. Protect small grains, corn, sorghum, cottonseed, etc. from wireworms, seed corn maggots, and some other marauding, soil-dwelling insects.

FREE BOOKLET describes crop diseases, how seed treatment works, how it contributes to better stands and yields. Profusely illustrated. Separate sections on wheat, oats, barley, cotton, flax. Mail coupon for your copy.

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Dr. George N. Cornell

A. E. Staley Begins Operations Research

DECATUR, ILL.—Appointment of Dr. George N. Cornell as director of a newly created operations research department at the A. E. Staley Manufacturing Co. was announced recently by A. E. Staley, Jr., president of the corn and soybean processing concern.

Mr. Staley said the new group will apply techniques of scientific evaluation and mathematical analysis in a systematic study of existing company operations, and develop data useful to management in directing affairs of the company.

Dr. Cornell, who has been chief chemical engineer in the manufacturing division at Staley's since 1946, has been on special assignment in the control division since January doing preliminary work and making plans for the new department.

Joining Dr. Cornell in the department in the near future will be William B. Bishop, Jr., who has been profit analyst in the control division, and Kenneth K. Schroeder, who has been manager of the insurance department.

L. B. Huffer, comptroller, through whose division the new department will operate, said the appointments will be effective as soon as replacements are selected and trained.

Dr. Cornell received his Ph.D. at Cornell University and joined Staley's in 1940 from Westvaco Chlorine Products Corp.

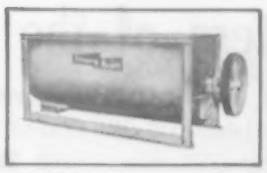
Mr. Bishop graduated from Millikin University in 1949. He joined Staley's standards section in 1950, served for a time in the Army, returned in 1953, became cost accountant in 1954, chief cost accountant in 1955 and profit analyst last April.

Mr. Schroeder graduated from Millikin University in 1950 and joined Staley's personnel division. He entered the company's management training program in 1952 after a tour of military service, became corporate insurance manager in the financial division in 1954 and insurance department manager in 1955.

Commercial Solvents Sales Up, Net Down

NEW YORK—Commercial Solvents Corp. reports for the quarter ended Sept. 30 consolidated net earnings of $406,252, equal to 15¢ per share on its common stock. Sales for the quarter were $17,180,000. In the same period in 1956 sales were $14,670,000, net earnings $480,000 and the per-share earnings 18¢.

Consolidated net earnings for the nine months ended Sept. 30 were $1,637,659, equal to 60¢ per share. Sales for the nine months were $46,548,000, compared with $43,947,000 in 1956.



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Read CAPITAL COMMENT in FEEDSTUFFS

Lilly **REPORT TO THE FEED INDUSTRY**

'Hygromix'...powerful new plus for swine feeds

New antibiotic feed additive prevents young worms from reaching maturity, stops worms from producing eggs and kills mature swine worms.

by Eugene S. Hahnel

Now . . . you can offer a powerful, new reason why hog raisers should feed your pre-starter, starter, grower, or hog supplement for mixing with grain.

The new antibiotic feed additive, 'Hygromix,' mixed into your swine feeds at the proper low level, will provide more complete control of swine worms than ever before possible. Swine feeds with 'Hygromix' control worms *continuously* and *automatically*, starting as soon as pigs begin to eat dry feed.

Completely new concept

Swine feeds with 'Hygromix' are a completely new concept of worm control. For the first time, they give the hog farmer a safe, effective method to *prevent* costly worm damage throughout the critical period. This is accomplished in three important ways: (1) 'Hygromix'-fortified feeds stop worm egg production. Tests show that the vast majority of pigs spread millions of worm eggs daily in their droppings. Yet, most pigs fed rations with 'Hygromix' soon have none of these three kinds of worm eggs in their manure. (2) Feeds with 'Hygromix' control and eliminate *three* of the most common and costly swine worms (rather than just one). These are the large intestinal roundworm (*Ascaris*), nodular worm (*Oesophagostomum*), and whipworm (*Trichuris*). (3) Feeds with 'Hygromix' protect pigs during the most critical time by preventing worms from growing to maturity . . . instead of merely *expelling* worms after much damage has already been done.

How feeds with 'Hygromix' compare

An outstanding authority* in the field of internal parasites of swine recently reported (after a careful survey of worm damage to market hogs in Wisconsin) as follows: "There is no indication from the Wisconsin survey that numbers of worms in swine were appreciably less in the interval of the survey, July 1953 to September 1955, than in 1920, 1934, 1945, or 1949" (when similar surveys were made by other investigators).

In other words, up to now, very little progress has been made in worm control . . . in spite of improved sanitation and use of various expellent-type wormers.

The comparison chart below suggests some of the reasons why progress has been so slow, and how feeds with 'Hygromix' can be expected finally to get at the root of the serious swine worm problem.

*Alice I. Goldsby, M.S., and A. C. Todd, Ph.D., Madison, Wisconsin. "Helminth Infections in Wisconsin Market Weight Swine."

COMPARISON OF WORM-CONTROL METHODS

Method	Kinds of worms affected	Eliminates production of worm eggs	Gives effective, continuous protection	Safe and useful to feed on continuous basis	Protects young pigs throughout critical period
'HYGROMIX'	Lg. Roundworms Nodular Worms Whipworms	YES	YES	YES	YES
SODIUM FLUORIDE	Lg. Roundworms	NO	NO	NO	NO
CADMIUM COMPOUNDS	Lg. Roundworms	NO	NO	NO	NO
PIPERAZINE COMPOUNDS	Lg. Roundworms Nodular Worms (Partial)	NO	NO	NO	NO

Write for further information

Eli Lilly and Company is now ready to provide you with detailed information about 'Hygromix,' and to help you comply with government regulations covering the use of this new antibiotic wormer in your swine feeds.

Lilly's introductory promotional program beamed to hog feeders is now appearing in 15 farm magazines. If you act promptly, you may take advantage of this strong, late summer and fall sales push to help sell your own 'Hygromix'-fortified feeds. Write to the address given below, or contact your Lilly sales representative for additional facts and information.

HYGROMIX
(*S. hygroscopicus* Fermentation Products, Lilly)
Lilly

ELI LILLY AND COMPANY, AGRICULTURAL AND INDUSTRIAL PRODUCTS DIVISION, INDIANAPOLIS 6, INDIANA

The Changing Pattern of the Feed Business

Many Stores, Mills Are Either Revising Their Operations or Going Out of Business, a 9-State Western Tour Shows

By Jess Blair
Feedstuffs Special Writer

EDITOR'S NOTE: Rapid changes in agriculture and the feed industry are being felt throughout the U.S., and they have been moving at an accelerated pace in many western areas. This is pointed out in the accompanying article by Jess F. Blair, special writer who recently toured nine western states. Mr. Blair analyzed feed marketing trends, particularly as they affect some of the smaller feed store and mill operators. He tells in this article how some feed men are changing their business operations and adjusting in various ways to the change, and how others are dropping out of the business. Feed men in all areas will be interested in this report on the changing pattern of feed and allied businesses.

The feed industry has been in a state of change the last several years, with methods and places of manufacture and distribution going through significant changes. However, the pace of these developments has accelerated during the last 12 months. At least this is true in many western states which I recently toured for four weeks.

In traveling through nine states from Texas to Oregon to southern California, I talked with dozens of feed store and mill owners, contacted county agricultural agents and visited with livestock feeders and poultrymen on their farms. In addition, there were stops at several agricultural colleges where the heads of the livestock and poultry departments expressed their views and made predictions as to the future.

Conditions were much better moisture-wise than a year ago when I made a shorter trip. The drouth has been broken in most areas, at least for one year, and the heavy snowpack in the mountains last winter had provided farmers with plenty of irrigation water.

In general, farmers and livestock feeders were optimistic. The extra moisture meant more feed at a cheaper price, and a majority of the grain farmers were storing large quantities of grain and hay for the coming winter.

It also meant more business for the feed mills; yet not every owner was sharing in this business. Some of the small feed stores in particular were becoming a casualty of modernization and automatic control systems in larger mills. The man who still sells feed by the sack in some of the western areas and some of the mills that have no more than a mixer and grinder are being by-passed by the large livestock feeders and poultrymen.

It appears that unless the owner of the small store or mill can spend a sizeable sum on equipment to meet the competition of larger firms, he must change his type of operation or go out of business.

General Store

Some dealers, not wishing to try to compete extensively in the feed field, have changed over to a general farm supply store basis, and they go after the suburban farm and town trade as well as some of the regular farm trade.

In northern Colorado, one feed store owner with a downtown location felt that he couldn't finance a mill, so he began to stock packaged fertilizer and insecticides. He laid in a stock of garden supplies and pet foods, and operated as a farm department store. His profit was as great as ever, and he did it with only a few thousand dollars. He said his profit in rabbit feed alone amounted to several dollars a week.

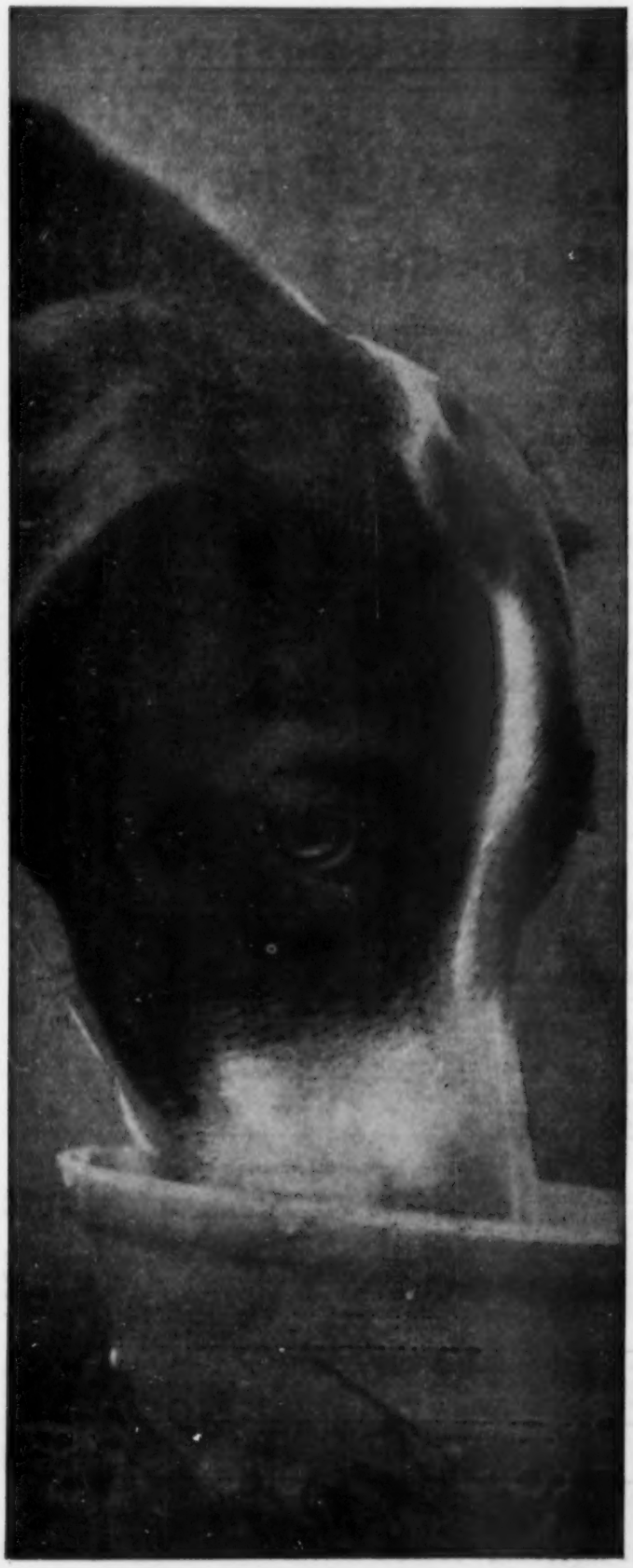
But where one man does this, others are closing their stores or sitting idly by hoping for a miracle.

In southern California, I listened while one owner counted on his fingers the number of small stores that had closed during the last year and a half. He kept counting until the total reached 20, and all were within a radius of the same number of miles. He gave two reasons for the failures. The fast-growing cities are driving the farmers and poultrymen farther out into the desert, and the larger mills are taking over more of the feed business with their production, handling and service facilities.

Yet one of these 20 stores had been reopened by a man and his wife, who were making a success of the business.

"There is a mill here that special-

(Turn to CHANGING PATTERN, page 60)



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6 MINERALS—*valuable milk minerals, calcium and phosphorus,* plus *the mineral salts of copper, iron, zinc and manganese chloride.*

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CONVENTION CALENDAR

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear ahead of the ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

● ● ●

Nov. 22.—Rutgers One-Day School for Poultry Servicemen in Feed and Allied Industries; Agora Hall, Rutgers University, New Brunswick, N.J.; chm., Prof. C. S. Platt, Poultry Department.

Feb. 12—Mutual Millers and Feed Dealers Assn. winter convention; Hotel Statler, Buffalo, N.Y.; sec.-treas., Mrs. G. A. Bentley, 41 Chautauqua Ave., Jamestown, N.Y.

June 28-July 1 — Georgia Feed Assn.; General Oglethorpe Hotel, Wilmington Island, Savannah, Ga.; sec.-treas., Will L. Kinard, 3240 Peachtree Rd. Bldg., Atlanta 5, Ga.

Oct. 7-8-9 — Northeastern Poultry Producers Council Poultry Exposition and Convention. Farm Show Bldg., Harrisburg, Pa.; chm., Alfred Van Wagenen, NEPPCO, 10 Rutgers Place, Trenton 8, N.J.

1957

Nov. 13-14—Illinois Feed Assn. and Illinois Poultry Improvement Assn., joint convention; Leland and St. Nicholas Hotels, Springfield, Ill.; sec., Dean M. Clark, Room 1115, Board of Trade Bldg., 141 W. Jackson Blvd., Chicago 4, Ill.

Nov. 15—Washington Animal Industry Conference; Western Washington Experiment Station, Puyallup, Wash.; chm., Walter Krumbholz, 841 Second Avenue Bldg., Seattle 4, Wash.

Nov. 17-18—Tennessee Feed Manufacturers Assn.; Peabody Hotel, Memphis, Tenn.; exec. sec., W. H. Levine, 200 Baxter Bldg., Nashville, Tenn.

Nov. 20-22—Midwest Feed Production School; Municipal Auditorium, Kansas City; sponsored by Midwest Feed Manufacturers Assn.; exec. v.p., Lloyd S. Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Nov. 22-27 — North Carolina Feed Manufacturers Assn. and allied group convention-cruise to Nassau; chm., W. G. Crawford, Goldsboro Milling Co., Goldsboro, N.C.

Nov. 25-26—Western Grain & Feed Assn.; Hotel Fort Des Moines, Des Moines, Iowa; sec., Robert Skinner, 928 Des Moines Bldg., Des Moines 9, Iowa.

1958

Jan. 6-7 — Kansas Formula Feed Conference; Kansas State College, Manhattan, Kansas; chm., Prof. F. W. Atkeson, Department of Dairy Husbandry.

Jan. 7-9—National Turkey Federation; Keil Auditorium, St. Louis, Mo.; sec., M. C. Small, P.O. Box 69, Mt. Morris, Ill.

Jan. 10-11 — Kansas Seed Dealers Assn.; Hotel Broadview, Wichita, Kansas; sec., O. E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

Jan. 19-21—Indiana Grain & Feed Dealers Assn.; Hotel Claypool, Indianapolis, Ind.; sec., Fred K. Sale, Board of Trade Bldg., Indianapolis 4, Ind.

Jan. 21-22—N.D. Poultry Industries Convention; Elks Club, Fargo, N.D.; chm., B. J. Duke, Poultry Improvement Board, Bismarck, N.D.

Jan. 22-25—Boston Poultry Show; Mechanics Bldg., Boston, Mass.; sec., Alfred Van Wagenen, Northeastern Poultry Producers Council, 10 Rutgers Place, Trenton, N.J.

Jan. 23-25—New Mexico Grain & Feed Dealers Assn.; Town House Motel, Santa Fe, New Mexico; asst. sec., Parley G. Jensen, P.O. box 616, Albuquerque, N.M.

Jan. 27-29 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; headquarters hotel, Dinkler Plaza; exec. sec., J. Paul

(Continued on page 56)

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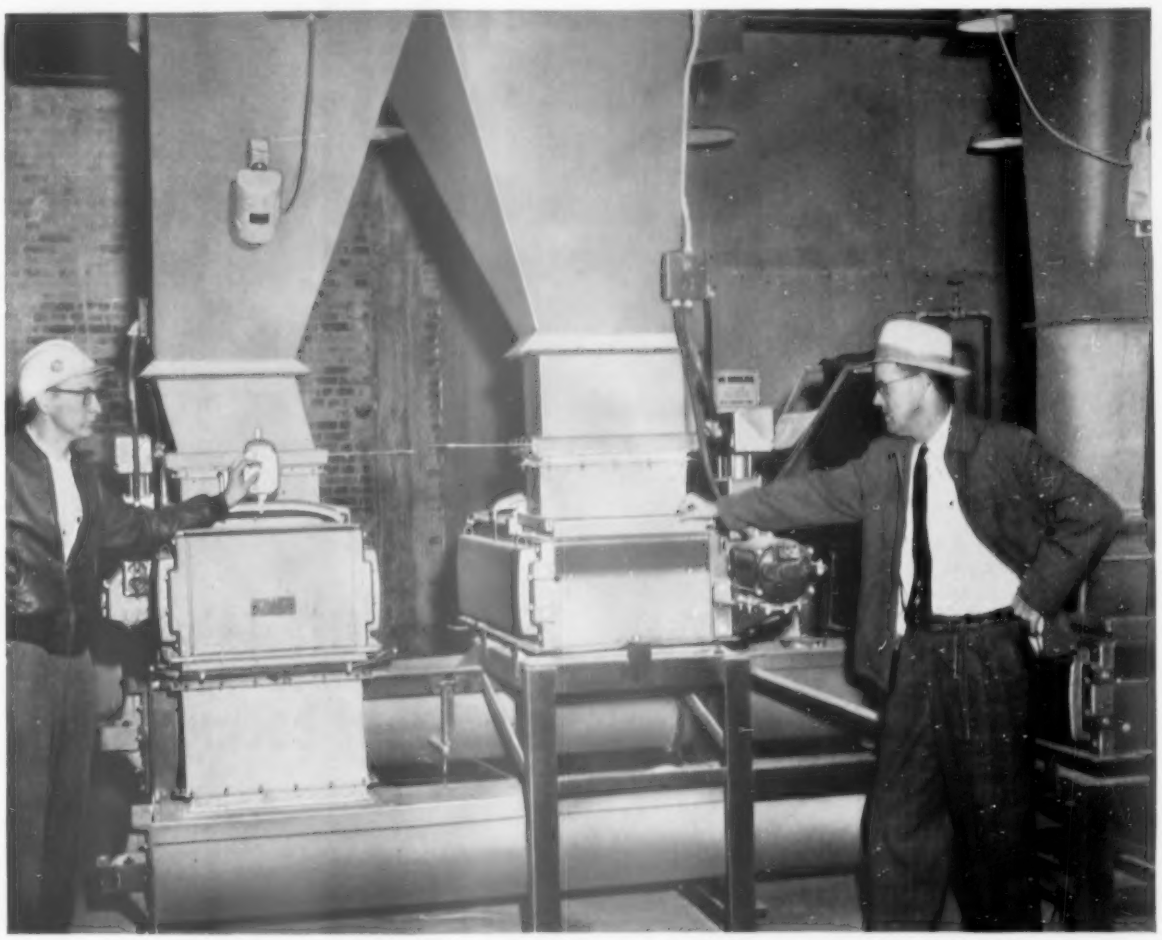

Merchen Scale Feeders blending salt and trace minerals at Carey Salt Co., Hutchinson, Kans.

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The Carey Salt Company produces salt blocks for cattle that contain a percent blend by weight of nutritional minerals. W&T Merchen Scale Feeders were selected for the blending operation.

If accurate blending of dry, free flowing materials is important to your production, Merchen Scale Feeders offer feed rates from 3 ounces to 3000 pounds per minute, always maintaining accuracy within 1% of the feed rate. The feeders compensate for changes in material density to maintain a constant feed by weight.

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In exhaustive field tests, TRITHIADOL has been proved to be an effective prophylactic agent in preventing coccidiosis. In these same field tests TRITHIADOL was completely safe. This safety was further demonstrated in additional tests where TRITHIADOL was used in amounts well beyond the recommended levels.

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TRITHIADOL was discovered and developed in this modern, spacious laboratory, one of the largest of its kind in the United States.

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You pay less for this stronger thread for bags

"SUPER CORDURA" SEWING THREAD reduces bag breakage resulting from rugged handling, because seams are much stronger.

"SUPER CORDURA" can be sewn with smaller needles, preventing material losses caused by sifting.

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GREATER seam strength, increased sewing efficiency, lower cost—these are the advantages of sewing bags with Du Pont "Super Cordura"* high tenacity rayon.

Because "Super Cordura" is far stronger than ordinary-fiber threads, danger of seam breakage is minimized—drop tests prove it. And because sewing with "Super Cordura" is more efficient, you save money in your closing operations. There are less breaks during closing; one thread does most jobs, reducing thread inventory.

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Jan. 31-Feb. 1 — Minnesota Turkey Growers Assn., Leamington Hotel, Minneapolis; sec., A. E. Eisenmenger, 2200 University Ave., St. Paul 14, Minn.

Feb. 3-5—Association of Southern Agricultural Workers; Hotel Marion, Little Rock, Ark.

Feb. 6-7—New Hampshire Poultry Health Conference; University of New Hampshire, Durham; chm., W. C. Skoglund, Poultry Husbandry Department.

Feb. 6-7—Oregon Animal Industry Conference; Oregon State College, Corvallis, Ore.; gen. chm., Fred West, Oregon Feed & Seed Dealers Assn., college chm., Dr. J. E. Oldfield, Department of Animal Husbandry.

Feb. 6-8 — American Dehydrators Assn., Broadmoor Hotel, Colorado Springs, Colo.; exec. v.p., Joseph Chrisman, 430 Board of Trade Bldg., Kansas City 5, Mo.

Feb. 10-11 — Montana Nutrition Conference, Montana State College, Bozeman; chm., Dr. O. O. Thomas, Department of Animal Industry.

Feb. 10-11—Poultry & Egg National Board; Bismarck Hotel, Chicago; mgr., Lloyd H. Geil, 19 S. Fifth St., St. Charles, Ill.

Feb. 13-14—Utah Feed Manufacturers & Dealers Assn., Convention and Nutrition Conference; Utah State University, Logan, Utah; sec., Dr. J. O. Anderson, Utah State University, Logan, Utah.

Feb. 13-14 — Washington State Feed Assn.; Chinook Hotel, Yakima, Wash.; sec., J. G. Wilson, 814 Second Avenue Building, Seattle, Wash.

Feb. 14-16—Institute of American Poultry Industries Fact Finding Conference; Municipal Auditorium, Kansas City, Mo.; sec., Dr. Cliff D. Carpenter, 221 N. LaSalle St., Chicago 1, Ill.

Feb. 23-25 — Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo, Ohio; sec., G. E. O'Brien, Ohio St., Greenville, Ohio.

Feb. 23-25 — Colorado Grain, Milling & Feed Dealers Assn., Shirley-Savoy Hotel, Denver; sec., R. B. Kelley, 714 Cooper Bldg., Denver 2, Colo.

Feb. 24-27 — Colorado Livestock Days; Colorado State University, Fort Collins, Colo.; sec., Dr. Sherman S. Wheeler, director of the experiment station.

Feb. 25-26 — Virginia Polytechnic Institute Nutrition School for Feed Men; Hotel Roanoke, Roanoke, Va.; chm., Paul M. Reaves, professor of dairy science.

Feb. 26-28 — Midwest Feed Manufacturers Assn.; Muehlebach Hotel, Kansas City; exec. v.p., Lloyd S. Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

March 12—Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati, Ohio; exec. dir., Lawrence E. Carpenter, 1232 Enquirer Bldg., Cincinnati 2, Ohio.

March 13-14—Oregon Feed & Seed Dealers Assn.; Multnomah Hotel, Portland, Ore.; sec., Fenn Emerson, Albany, Ore.

March 20-21—University of Maryland Nutrition Conference, Shoreham Hotel, Washington, D.C.; Dr. G. Lynn Romoser, Department of Poultry Husbandry, University of Maryland, College Park, Md.

April 17-19—California Hay, Grain & Feed Dealers Assn., Ambassador Hotel, Los Angeles; chm., Forrest Corzine, Charles T. Taylor Co., Los Angeles.

April 23-24—Texas Feed Manufacturers Assn., Baker Hotel, Dallas, Texas; sec., Ben E. Schmitt, 528 Bewley Bldg., Ft. Worth, Texas.

April 25-26—Texas Grain & Feed Dealers Assn., Baker Hotel, Dallas, Texas; sec., Ben M. Ferguson, 614 Meacham Bldg., Fort Worth, Texas.

May 1-3 — Kansas Grain & Feed Dealers Assn.; Broadview Hotel, Wichita, Kansas; sec., O. E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

May 4-5—Missouri Grain, Feed & Seed Assn.; Hotel Governor, Jefferson City, Mo.; sec., D. A. Meinershagen, Higginsville, Mo.

May 18-23—Grain Elevator & Processing Superintendents; Minneapolis, Minn.; sec., Dean M. Clark, 1115 Board of Trade Building, Chicago 6, Ill.

May 21-23—American Feed Manufacturers Assn.; Morrison Hotel, Chicago; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 4, Ill.

June 1-3 — Indiana Grain & Feed Dealers Assn., mid-summer convention, French Lick-Sheraton Hotel, French Lick, Ind.; exec. sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis, Ind.

June 8-10 — Eastern Federation of Feed Merchants; Whiteface Inn, Whiteface, N.Y.; exec. dir., Austin W. Carpenter, Box 66, Sherburne, N.Y.

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530 Persons Attend Central Meetings In Wisconsin

MILWAUKEE—A total attendance of 530 persons at several Wisconsin district meetings of the Central Retail Feed Assn. heard reports of a smooth-functioning medicated feed labeling practice and an increase in bulk delivery of feeds. Considerable emphasis was placed on sound practices in dairy feeding by meeting speakers.

"Local feed dealers are in an excellent position to intelligently advise dairy farmers about feeding problems," the dealers were told by R. P. Niedermeier, department of dairy husbandry, University of Wisconsin, one of the speakers. "Sound advice results in satisfied customers—and more profit for both the farmer and the dealer," he said.

A University of Wisconsin special circular — No. 39 — on feeding the dairy herd, using home grown grains as a supplement and a base for dairy rations, was outlined in detail.

Commercial feed sales of 1,048,708 tons in 1956, an increase of 9% compared with 1955, were reported by W. B. Griem, of the state feed inspection department. Two thirds of the tonnage retailed was formula feeds, Mr. Griem said.

Contrary to the experience of some states, Mr. Griem said that oats test weights showed that the 1957 Wisconsin crop was about as heavy as oats of a normal year.

G.L.F. Reports Feed, Grain Commodity Marketing Down 3%

ITHACA, N.Y. — Feed and grain commodities marketed by the Cooperative G.L.F. Exchange, Inc., Ithaca, N.Y., in the year ended June 30, totaled 1,290,000 tons, down 3% from the preceding year, it was announced at the stockholders' annual meeting.

The farmer purchasing cooperative moved an over-all total of 2,666,000 tons of farm production supplies through its wholesale facilities in fiscal 1956-57, the highest in G.L.F.'s 37-year history. Record figures were 552,000 tons of lime, up 17% over the previous year; 922,000 cases of eggs marketed, up 2%; and petroleum products, up 3%.

Records of other commodities included: Seed, 19,500 tons, down 6%; fertilizer, 236,000 tons, down 1%; farm hardware, $16,722,000, up 4.5%; grain marketing, 2,229,000 bu., up 46%, and dry beans marketed 315,000 cwt., down 11%.

The report states that 580 G.L.F. stores and franchised dealers in New York, New Jersey and northern Pennsylvania provided more "service tons" than in any other year. These include feed mixing with the farmers' own grains, lime and fertilizer spreading, seed cleaning and trucking.

Retail stores in the three-state area did a gross business of $113 million, third highest in history.

The record tonnage figure includes manufacture in four feed mills, 13 fertilizer and chemical plants, eight seed plants, eight hardware warehouses and 13 petroleum terminals.

Improvements cited include the installation of modern pellet mills and loading facilities at the Buffalo feed mill and completion of research work at Cornell University on protein-energy relations in poultry feeds for improving poultry mashes.

PARTNERSHIP FORMED

CALMAR, IOWA—Robert Eppens, Austin, Minn., will join Charles Ohlert in a partnership for operation of Calmar Milling Service. Mr. Ohlert has been in business for the past 15 months.

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In the lower corner, meet Alex Barbour, Daffin Feedmobile Owner. He's prepared to give feed service in his area that's unequaled for convenience, economy and quality. He does it "all the way The Daffin Way".

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Mineral Nutrition Gets Analysis At Butler Chemical Symposium

By THOMAS E. LETCH
Feedstuffs Staff

HOUSTON, TEXAS—Mineral nutrition received a thorough analysis at the Livestock and Poultry Mineral Symposium sponsored by the Butler Chemical Co. in the Shamrock Hilton Hotel here recently.

About 75 persons heard talks by industry and college specialists on mineral needs, utilization and supplementation. The speakers included Harry J. Konen, feed consultant, Houston; Harry German, Texas Farm Products Co., Nacogdoches; Dr. J. H. Bridges, Kern County Land Co., Bakersfield, Cal.; Dr. J. K. Loosli, Cornell University; Dr. Wendell A. Carlson, South Dakota State College; Dr. A. Clark Griffin, department of biochemistry, Texas Medical Center, Houston; Reed McDonald, chief of the Texas feed control service, Texas A&M College, and Dr. B. L. Reid, Dr. W. P. Crawford, Dr. J. R. Couch and Dr. J. H. Quisenberry, department of poultry science, Texas A&M.

George A. Butler, president, and Floyd Gee, sales manager, Butler Chemical Co., Houston, acted as hosts for the symposium and for a trip down the Houston Ship Canal the following day.

The research spotlight has been brought to bear squarely upon mineral nutrition by recent developments, said Mr. Konen. These developments concern molybdenum, bromine, inorganic sulfur, zinc and selenium, he said.

These findings are important to the feed industry, he said, because the "increasing knowledge of mineral nutrition means another direction from which we can expect help in getting better feed efficiency."

Trace Minerals

Mr. Konen presented a round-up of much of the available information on the various minerals and what they do in feed nutrition. His discussion was primarily concerned with elements needed in "trace" amounts—manganese, iron, copper, cobalt, iodine, molybdenum and selenium.

"One of the more important and interesting functions of these trace elements is their action in enzyme systems," Mr. Konen stated.

"There is a growing mass of evidence consistent with the goals set for animal performance, which leads to the realization that we can no longer safely assume that the universal presence of the trace elements in our common feedstuffs will take care of animal needs," he said.

The conviction is growing, he continued, that judicious fortification of formula feeds with trace mineral elements is warranted. Such supplementation is in accord with the service concept of the feed industry. Addition of the factors known to be required, at levels approximating nutritional activity, can provide some measure of insurance against performance slow-down resulting from unforeseen or unrecognized shortages in natural feedstuffs. The cost of the protection is minor.

In conclusion, Mr. Konen warned the feed men: "In contrast with vitamin additions, mineral fortification—especially that involving trace elements—demands the exercise of more care and judgment on the part of the feed manufacturer. Deficiencies need to be corrected, but excesses lead to toxicity, whether from over-fortification or from poor distribution."

Role of Phosphorus

Looking at phosphorus supplements from the feed manufacturer's point of view, Mr. German explained that there is increasing interest in the phosphorus situation because the role of phosphorus is dynamic—the element of life and death. Nutritionists are being asked to keep up with the newer findings, and advise purchasing agents what supplements to buy and to provide educational programs for areas deficient in phosphorus, like the Gulf Coast area, he said.

Mr. German recalled the history of phosphorus supplements and presented a chart showing comparative cost data on the different types of phosphorus products from a number of locations. The figures showed that at the time of preparation, soft phosphate was the lowest price per unit

DISCUSS BUTLER PROGRAM — Looking over the program at the recent Livestock and Poultry Mineral Symposium held in Houston, Texas, are George A. Butler, president of the Butler Chemical Co., Houston; Dr. J. R. Couch, Texas A&M College, and Floyd Gee, sales manager, Butler Chemical Co. Butler sponsored the symposium which brought together college and industry speakers for the examination of available information on mineral nutrition.

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of total phosphorus while bonemeal was the most expensive. Defluorinated phosphates and phosphatic feed solutions were priced at about the same level while dicalcium phosphate was more expensive per unit.

"The feed manufacturers' problem is not solved by purchase of the lowest priced supplement since the different species of animals require or have a preference for certain phosphorus supplements," Mr. German said.

For quality control purposes, he said, the feed manufacturer is in doubt as to what is the logical specification for a phosphorus supplement for all feed formulas.

In conclusion, Mr. German made these points: (1) For livestock, more emphasis should be placed on improving the forage by fertilization of the soil, and possibly newer species of grasses to give farm animals more food from the soil. (2) Phosphorus is a very important link in providing adequate nutrition and is under many conditions a limiting factor in utilization of animal diets. (3) More research is needed for all species of animals.

Phosphorus Assays

In a review and an analysis of the methods of determining phosphorus availability in feed supplements, Dr. Couch noted that there are many different types of assays. "Some appear to work quite well under the conditions of one laboratory, but varying results may be obtained under different conditions and with different experimental results."

Criteria which may be used in determining phosphorus availability are, he said, bone ash, X-ray studies, blood phosphorus, growth and results obtained through the use of labeled radioactive phosphorus compounds and/or supplements.

Dr. Couch pointed out certain advantages in the method developed by Dr. H. M. Scott and his group at the University of Illinois. The method consists of rearing chicks on a phosphorus deficient diet made up of both natural and synthetic ingredients for a depletion period of four days and following this with a repletion period of six days, using the deficient diet supplemented with graded levels of standard sodium acid phosphate and also feeding test samples at the same comparative phosphorus levels.

"The depletion period should place all chicks on the same plane of phosphorus nutrition and there would be less interference from the phosphorus found in the phospholipids of the egg yolk," he said. The short 10-day assay period is also an advantage to the method, according to Dr. Couch.

Dr. Couch called the method used by Dr. G. F. Davis and co-workers at the University of Florida the "most accurate measure of phosphorus availability which can be ascertained." This method utilizes the study of labeled radioactive phosphate supplements with young cattle to determine the phosphorus balance and tissue distribution.

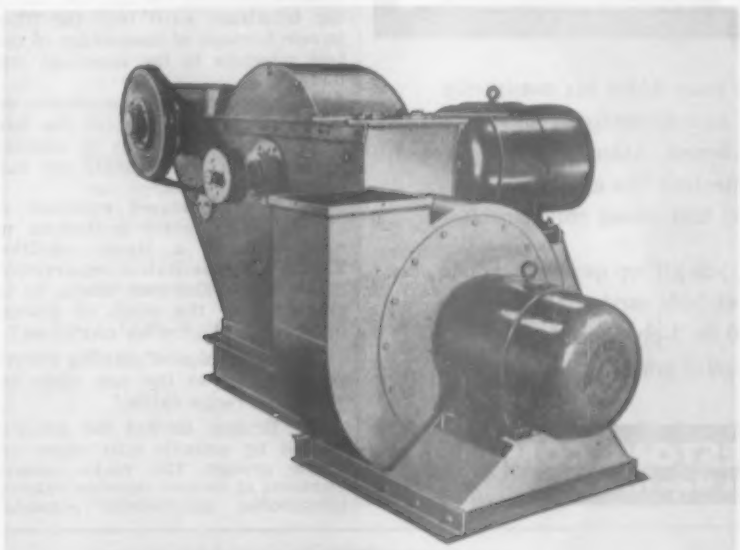
Watch Fluorine

In summary, Dr. Couch said that "it is imperative that the nutritionist carefully examine the fluorine content of the phosphorus supplements so as not to exceed a minimum fluorine toxicity level for the class of animals for which the feed is formulated. It appears that a great deal more research work is indicated before the final answers are obtained with regard to the availability of phosphorus in phosphorus feed supplements."

In another talk, Dr. Couch summarized available information on trace elements in poultry nutrition.

"It is apparent," he said, "that a great deal of research is yet to be done with regard to the known requirements of chickens and turkeys for trace elements. The essential trace elements presently thought to be required are iron, copper, zinc,

BUTLER MINERAL SYMPOSIUM SPEAKERS — Speakers at the recent Livestock and Poultry Mineral Symposium sponsored in Houston by the Butler Chemical Co. included (from left to right): Dr. J. H. Quisenberry, Texas A&M College; Dr. J. R. Couch, Texas A&M; Harry J. Konen, feed consultant, Houston; Dr. J. H. Bridges, Kern County Land Co., Bakersfield, Cal.; Dr. J. K. Loosli, Cornell University; Dr. B. L. Reid, Texas A&M; Harry German, Texas Farm Products Co., Nacogdoches; Dr. W. P. Crawford, Texas A&M; Reed McDonald, chief of the Texas Feed Control Service, Texas A&M, and Dr. W. A. Carlson, South Dakota State College.



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writes Lexie Kennedy, Newton, Ill. Feed Mill operator and Stock farmer

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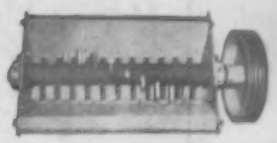

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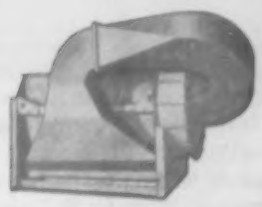

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manganese, iodine, cobalt and molybdenum. These trace elements can be added to poultry feed formulas and are currently being added to such by firms that are manufacturing poultry feeds. The exact quantities of each of the elements in question are not established, with the exception of manganese.

"It is quite possible," he continued, "that additional elements will be shown to be required by the chicken and turkey as a result of the extensive research programs presently in progress on trace elements in many laboratories."

In regard to the recent work done on selenium, a toxic element shown to be needed, Dr. Couch warned: "Under no circumstances should a feed manufacturer consider adding selenium to a practical poultry feed formula at the present time."

Range Minerals

In his discussion of mineral nutrition in range cattle, Dr. Bridges said that several problems are faced:

"1. The Problem of absorption of mineral elements through the wall of the intestines and into the blood stream because of insolubility of certain minerals in the intestinal contents.

"2. Balancing the quantitative requirements of animals for the minerals with the amounts of minerals in feed that the animals are consuming.

"3. With increased emphasis on growth and greater production we are inducing a stress condition. Should the quantitative requirements of animals under such stress be increased over the needs of animals under normal growing conditions?

"4. The problem of relating mineral requirements to the age, class and weight of range cattle."

Dr. Bridges divided the minerals needed by animals into major and minor groups. The major mineral elements of sodium chloride, calcium, phosphorus, magnesium, potassium and sulfates are needed in large amounts, he noted, while the minor elements of copper, iron, manganese, zinc, cobalt, iodine, fluorine and molybdenum are needed in trace amounts.

"Aside from their general bodily

Richard K. Davies

APPOINTED BY ADM—Richard K. Davies, assistant soybean buyer for Archer-Daniels-Midland Co., Minneapolis, since 1945, has been named manager of soybean purchasing to succeed the late Forrest E. Benson, ADM vice president who died Sept. 10. In the new position, Mr. Davies will direct all of the company's soybean buying. He has been an employee of ADM since 1930, when he joined the soybean accounting department. Announcement of the appointment was made by A. C. Hoehne, vice president and manager of ADM's soybean division.

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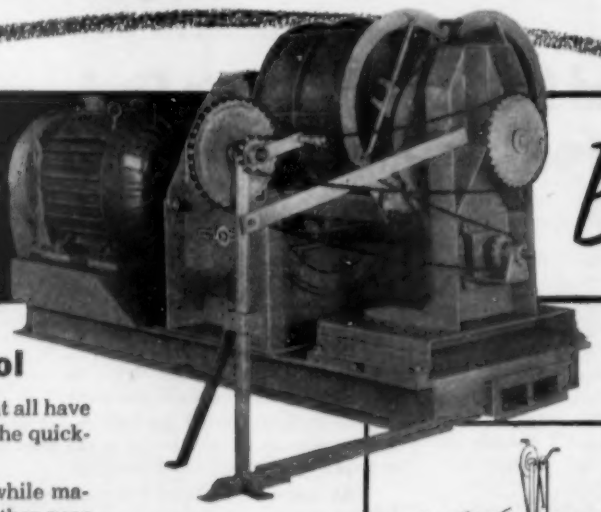

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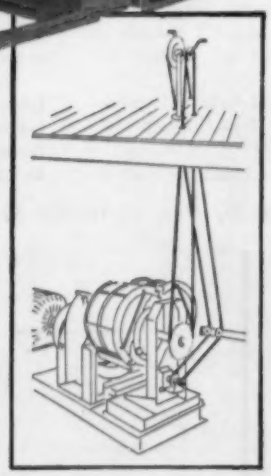

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function, minor minerals are necessary for proper functioning of the enzyme system," Dr. Bridges said.

In general, he continued, range grasses tend to provide adequate amounts of calcium. Phosphorus is frequently lacking, however, Dr. Bridges noted. Vitamin D is needed in the assimilation of calcium and phosphorus, he added.

"Work on trace mineral supplementation, especially in range cattle, has been very limited," he said. "It is quite probable that if trace-mineralized salt is used, few if any nutritional deficiencies would occur under most range conditions," he stated. However, he noted that on California ranches with some 100,000 head of Hereford cattle, it has been concluded that it pays to use a phosphorus supplement all year around.

Dairy Requirements

In reporting on the mineral nutrition of dairy cattle, Dr. Loosli noted that 14 elements are known to be essential. The amount of calcium needed ranges from 0.12% of the ration for a maintenance ration up to 0.77% for a 100-lb. heifer. Phosphorus required ranges from 0.12% for maintenance up to 0.66% for the 100-lb. animal. Dr. Loosli said a recent study has shown that the responses of calves were not significantly improved by any level of phosphorus above 0.22% of the ration, compared with 0.40% formerly thought to be required.

Salt is needed, he said, to furnish sodium ions. It should be fed at the level of 30 gm. daily.

Magnesium in the amount of 0.6 gm. per 100 lb. body weight is necessary to help prevent tetany.

Cobalt in the amount of 1 mg. daily is needed in such cobalt-deficient areas as Florida, New York, New England, Michigan, Wisconsin and elsewhere. Copper deficiency usually can be prevented by adding 1% copper sulfate to salt, Dr. Loosli said, although the exact requirement is not known. Feeding iodized salt will prevent iodine deficiency. Manganese deficient forages have been found, but it is not of any known practical significance, he said.

In conclusion, Dr. Loosli said that other minerals are present in adequate amounts in natural feeds to meet the needs of dairy cattle, as far as is known at present. "Recent claims that supplements containing the mineral elements and vitamins added to good quality rations will greatly increase milk production of high yielding cows are without experimental support, but seem worthy of study," Dr. Loosli said.

"Chicks and turkey poults have a critical need for available phosphorus and unless that need is continually supplied their overall growth and activity will suffer," said Dr. Carlson in his talk on phosphorus metabolism in chickens and turkeys. "Older stock require smaller amounts in general and are able to store phosphorus to tide them over short periods when a lack of the mineral exists in their diet. However, they too need an adequate total supply of phosphorus to maintain maximum reproductive performance."

Phosphorus-Calcium Relationship

Dr. Carlson pointed out that calcium and phosphorus are so interrelated in their metabolism that a deficiency of either gives rise to the same general symptoms.

For maximum growth and bone ash development the requirement for phosphorus in practical type rations for turkey poults has been shown to be approximately 0.60% inorganic phosphorus, he said.

Phosphorus performs several vital functions. Dr. Carlson pointed out that the 20% not found in bones is distributed throughout the soft tissues and fluids of the body and perform these functions: (1) Phosphorus as the phosphate ion is concerned in the storage, liberation and transfer of energy. (2) Phosphorus is concerned as the phosphate ion in the maintenance of the acid-base balance of body fluids. (3) The phosphate ion is necessary for the formation of phospholipids, hence is particularly important in fat metabolism and in the mobilization of fats from the liver. (4) Other phosphorus containing metabolites include the phosphoproteins, nucleoproteins and several enzymes. The metabolic significance of these materials is not known. Perhaps this is a storage mechanism, he said. Nucleoproteins are the chief constituents of the chromosomes. Life would be impossible without the enzymes which require the phosphate ion as part of their prosthetic group.

Reporting on work done at South Dakota State College, Dr. Carlson said: "It is evident from this work that the turkey hen can store a lot of phosphorus to tide her over the breeding season, providing the diet she is receiving contains some phosphorus. It would not be recommended that a turkey breeder diet be used for best results with less than 0.75% total phosphorus, probably 0.40% in the organic form."

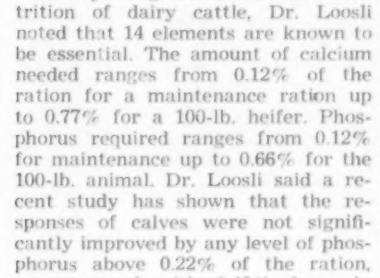
Because bones are so important a storage place for phosphorus, it would seem highly essential that diets be well supplied with phosphorus all through the starting and growing periods for either chickens or turkeys, Dr. Carlson stated.

Phosphorus in Chicks

Dr. Reid reported on recent experiments on phosphorus availability with chicks. In reviewing the methods used to determine phosphorus availability, he noted that "growth is of much more practical significance than bone ash and some of the other methods of evaluating phosphorus availability. In the absence of good growth, bone ash values become limited in value with regard to the estimation of phosphorus availability."

Results from Texas A&M studies, Dr. Reid said, indicate from 6% to 10% higher phosphorus availability upon supplementation of a particular phosphorus supplement to a practical

(Continued on page 65)



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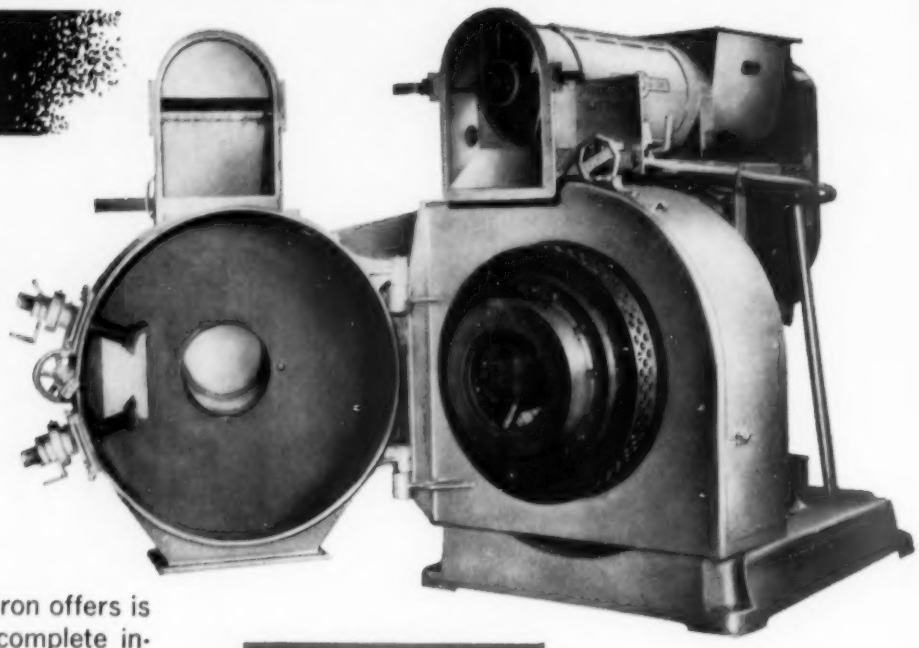

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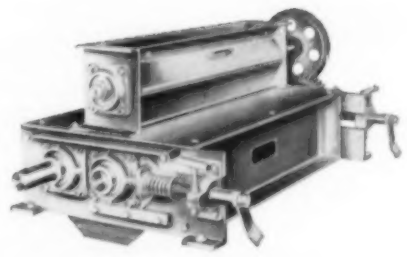
This louvered cooler is another Sprout-Waldron *first* in solving feed mill operating problems. To provide faster, more economical results, it is uniquely constructed so that the cooling and drying air is forced through the pellets regardless of how partially filled the column might be. The movable louvers can be substituted in existing coolers. Write for Bulletin 166.



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FE/432

diet as compared with the same supplement added to a synthetic diet. "The evidence is not yet clear whether the rate of growth with the two diets is a contributing factor or the presence of an unidentified factor in soybean oil meal, dried whey, and alfalfa in the practical type diet is exerting the effect which causes the increased phosphorus availability under the conditions of these studies."

In conclusion, Dr. Reid pointed out that "such factors as rate of growth, unidentified growth factors, trace mineral elements and the type of experimental animal used may all contribute to the results of an assay for phosphorus availability."

Phosphorus in Swine

Phosphorus metabolism in swine was the topic of Dr. Crawford. He reviewed the experimental work which showed the need for phosphorus in swine rations, and discussed some of the work to determine the availability of phosphorus in different phosphorus supplements.

"From a practical standpoint," he said, "it would appear that if swine feeds consist of grain, supplemented with tankage, meat scrap, fish meal, skim milk or other animal protein supplements, the danger of encountering a phosphorus deficiency in swine is decidedly reduced. In the case of feeds containing grain and plant protein supplements it may become necessary, under certain conditions, to supplement with a source of calcium and phosphorus."

Dr. Crawford stressed the need for the proper calcium-phosphorus ratio. He also reviewed work with controlling parakeratosis by the use of zinc.

"Under practical conditions," he stated, "it would be best not only to supply adequate levels of calcium and phosphorus in the complete feed, but also to supply the minerals to pigs free choice."

To round out the picture of phosphorus metabolism, Dr. Griffin presented information on how man utilizes that element.

"Since phosphorus is quite widely distributed in the general foods of man, there isn't too much chance that deficiencies will be encountered," he stated.

However, he continued, phosphorus, or more specifically, phosphate, has a very important role in the human body. A vital function, he said, is that of the transport of the energy required for growth and for maintenance of life activities. Inorganic phosphate is found in thousands of different compounds throughout the body tissues.

"When sugars or fats are burned within the body the energy is turned over to organic phosphate; the energy being held in the phosphate bonds and usually in a compound we refer to as adenosine triphosphate," said Dr. Griffin.

"The role of phosphorus now takes some new meaning because of this relation to energy transfer. Deficiencies in this system may be responsible for a host of our known diseases—cancer, atherosclerosis, mental diseases, arthritis, faulty vision, muscular dystrophy—just to name a few," he stated.

In another talk, Mr. McDonald reviewed features of the new Texas Feed Law.

Dr. Quisenberry, in a summary of the papers presented during the symposium, said that "it is evident that there is a tremendous bank of information in regard to vitamin and mineral nutrition. Ofter we are so interested in the romantic side of nutrition, that is the practical applications, that we neglect basic research."

From a practical standpoint, Dr. Quisenberry concluded: "We have to translate scientific data into percentage of rations so that the feeder can get maximum efficiency of production at the least cost."

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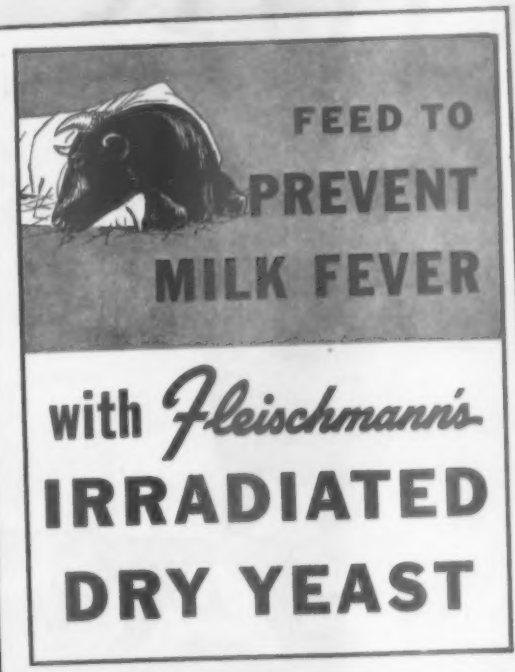
HEAVY VITAMIN D feeding for MILK FEVER PREVENTION



with *Fleischmann's* IRRADIATED DRY YEAST

The results of the Ohio Agricultural Experiment Station research on prevention of Milk Fever have been published for a little over two years. Reports have appeared in many farm and dairy publications. As a result, more and more leading dairymen are feeding heavy doses of vitamin D five to seven days before calving to prevent Milk Fever.

This pre-calving special vitamin D feeding with Fleischmann's FIDY Type 142F is *low cost protection* against this costly disease*.

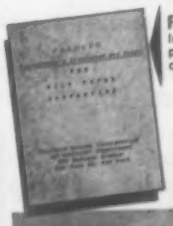
Now Fleischmann's FIDY Irradiated Dry Yeast, a rich source of vitamin D,— and a source used in the Ohio tests—is being put into more and more specially medicated feeds. *Check the tag for vitamin D content when you buy medicated feed. Feeding instructions should indicate 30,000,000 units per day if the ration is designed to protect your cows from Milk Fever.*

FIDY itself is also available for custom mixing with your specially formulated feeds. (If you have difficulty in obtaining FIDY, write us direct.) You will also find that many leading dairymen set up a Milk Fever prevention program for their herd through their veterinarian.

This calving season, avoid costly Milk Fever losses. Take the first step. Learn more about this proved inexpensive method of Milk Fever prevention with Fleischmann's FIDY Irradiated Dry Yeast—a rich economical source of vitamin D_2. *Write for the free pamphlet described below.*

*Call your veterinarian now if cows are already down with Milk Fever. FIDY is a prevention, not a treatment.

STANDARD BRANDS INCORPORATED, *Agricultural Department* 625 Madison Ave., New York 22, N. Y.



FREE NEW PAMPHLET "Feeding Fleischmann's Irradiated Dry Yeast for Milk Fever Prevention." Complete data, reprint and directions for you or your custom mixer. Address Department IIC-37.

Fleischmann's F·I·D·Y IRRADIATED DRY YEAST RICH IN VITAMIN D FOR FOUR-FOOTED ANIMALS

Now, after 15 years of research at the Ohio Agricultural Experiment Station, Standard Brands can tell this story! The advertisement shown here will appear in the leading dairy journals to acquaint your customers with how to feed for milk fever prevention.

Experiments at the Ohio Agricultural Experiment Station have led to an economical way of feeding heavy doses of FIDY for prevention of milk fever.

This is good news for dairymen—and good news for you—for it means that dairymen can protect their valuable cows at freshening time. You can now offer special formula mixes or FIDY itself to be fed as an aid in the prevention of milk fever.

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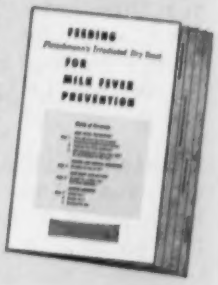
Send now for portfolio giving complete information. Simple instructions for mixing, labeling and feeding are included. It's all there—clear, concise, easy to read. Request your portfolio today on your letterhead. Be ready to serve the dairymen in your community. Address Desk FS-117. STANDARD BRANDS INCORPORATED, *Agricultural Department*, 625 Madison Avenue, New York 22, N. Y.



Fleischmann's F·I·D·Y IRRADIATED DRY YEAST RICH IN VITAMIN D FOR FOUR-FOOTED ANIMALS

The Welcome Sign Is Out

By Al P. Nelson

The tall, youngish and neatly dressed salesman closed the door of his coupe, tucked a thin brown briefcase under his arm and walked toward the office of the Joe Brooks Co. There was something about the way he braced himself and straightened a flap on his suit coat pocket which revealed him to be a little nervous. And, in fact, an impartial observer might think he was probably "fresh out of training school."

The young man opened the door to the salesroom and stood looking for a moment at the busy scene. Farmers were standing around inspecting merchandise, a few clerks were busy filling orders and from the mill in back sounded the steady roar of machinery indicating grain being ground and mixed with concentrates, soon to be fed to livestock and poultry.

Sighting another, but older salesman seated on a wicker settee in a browsing spot which also contained a table of magazines, the young man gradually moved in that direction. Finally he saw a sign which said, "Salesmen Welcome . . . Have you a product or service, or idea we can sell or use to satisfy our customers, sell more merchandise and make a profit? We want to hear about it. You're busy, and we're busy, but let's get acquainted . . . Joe Brooks."

Salesman Feels Welcome

A winning smile broke over the face of the young salesman. Some of his tension seemed to fade. "Say," he said to the older salesman, "that's pretty nice. He welcomes salesmen. I like that."

The older salesman smiled. "Yeah, it's great to get a welcome like that. Joe really wants ideas. He looks on us as friends and not as guys who take up his time. But you notice he says he's busy, too. That's a warnin' not to tell too many stories or waste too much of his time."

The young salesman grinned. "Oh, I got that, too. He didn't say that till the end of the copy. Shows he studies things out. I'm looking forward to meeting him."

"You new?"

The young salesman nodded quickly. "I've been out with an older man in another territory, but this is my own route. It's a kind of different feeling—being out on your own."

"Know just how you feel," replied the older man. "Been traveling 12 years myself now. My knees shook on my first call. I was scared to death."

The younger man laughed. "I've been feeling that way since breakfast. My trainer said I'd be."

Joe Loves Ideas

"Well, you started with the right guy," advised the older man. "If you've got a worthwhile product, and if you show Joe he can sell it at a good profit, you may make a sale. And don't forget to give him a business building idea or two if you have them. He loves ideas. He respects men who have ideas. They are plus values a salesman can give him."

"Thanks," said the younger man. "I appreciate knowing that. You're damn nice giving another salesman a tip."

"Oh, you won't be cutting in on me," grinned the older man. "I saw the sign on your car. You sell dog food. I sell calf feed. We're not exactly competin' yet."

The young salesman grinned. "Fair enough. My name's Higgins, Bob Higgins. What's yours?"

"Murteson. Ralph Murteson. We'll probably meet each other lots of times in feed stores. Bone up on stories, Higgins. Then when we meet and have to wait to see dealers we can pass the time makin' each other laugh."

"Okay," smiled Higgins. "My boss told me the same thing. Always have a collection of stories to ease the tension of buying and make the dealer realize you are a human being like he is, he told me. And never tell a story unless you can make it brief,

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Harry Fiste, feeding 100 head

I think that the gains are much faster and the bloom is much better. Their hair is in a lot better condition. I've had no cattle really go off feed.

Emanuel Schlund, feeding 70 to 80 head

They've got good shiny coats and they eat all the time. With green cattle on Dynafac we would make 3 1/2 to 4 lbs. daily gain.

Ed Borchers, feeding 500 to 700 head

I think these steers have been eating about 2 to 3 lbs. more grain per day and their hair looks good. Just seems to get a better finish on them with this Dynafac.

Joe Corpstein, feeding 1600 to 5000 head (feeding for prime)

We had 60 steers on test with Dynafac for 105 days that made gains of 3.8 lbs. per day and dressed out 62.08%.

Wilbert Anders, feeding 60 head

Dynafac* is distributed nationally for Armour by the Chemical Department, McKesson & Robbins, Inc. For further information contact your nearest McKesson chemical branch office.

A new Dynafac full-color motion picture is now available, "Feeds, Facts and the Future." Write: Armour and Company, Union Stock Yards, Chicago 9, Illinois.

*Armour brand tetra alkylammonium stearate

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Albert J. Powell

CREDIT MANAGER — Central Soya Co., Inc., and its feed division, McMillen Feed Mills, announces the promotion of Albert J. Powell to the position of general credit manager. Mr. Powell will have general administrative responsibility for managing the company's credit policies. He joined Central Soya in 1941 as a cost and general accountant. He was named plant auditor at Gibson City, Ill., in 1947, and assistant credit manager in the Ft. Wayne, Ind., offices in 1955. He will continue to make his headquarters in Ft. Wayne.

and be sure that the dealer has the time to listen."

"Your boss has been around," Murteson observed. "He's not been raised in a swivel chair."

"Oh, no. He was selling on the road for years. Even now, he takes trips through the territory all by himself visiting dealers just to 'keep in touch,' he says."

Trends Start in the Field

"Smart guy," said Murteson. "He knows that retailing trends start in the country and seep back to headquarters months later. So—why not get out and spot those trends quicker than your competitor? My boss is the same way, only lately he's gotten too darned interested in huntin'. Takes too many trips to Canada if you ask me, but what the heck, he's boss. Maybe I'd do the same thing if I was in his shoes."

The two men laughed together at that. "Say," said the young man suddenly. "You're ahead of me. Maybe I ought to go to the next town and make a call—it's only five miles—and then come back. By that time you'll be through and I can see Mr. Brooks.

"It won't take me long," said Murteson. "I'm established here. I got one display idea to give to Joe, get his current order and I should be out of here in a half hour. Better stick around, or you may lose Joe."

"What do you mean?"

"Well, he's here now, and he's spotted you. So that means you follow me. If you aren't here when he's finished with me, he may go out into the country canvassing the rest of the day. That guy is always out for business when he gets spare time. That's why his sales and profit are high."

"I suppose you are right," replied Higgins. "But I have so many calls to make this week. How do you manage making all your calls when you get tied up in various dealerships for a long time?"

"I never worry about that, Higgins," smiled Murteson, "and I used to be as nervous as you about making lots of calls. It's not the number of calls you make in a day, it's the business you sign up. Why, I don't mind hanging around all day with a dealer if I have to, so long as I get the business. Once I'm in, I'm in, and I can always work on the rest of my calls."

"I'm lucky I met you here," Higgins said frankly. "I'm learning a lot. You put things differently than they do in training school."

"I'm generous today," grinned Murteson, "but don't ever start selling calf feed. Otherwise, I might close up quick as that." And he winked as he snapped his fingers.

Both men laughed at that sally. Then Murteson arose. "Joe's finished with that customer now, and I guess I'm next. I'll finish with Joe about a half hour before lunch. Then you ask him to lunch. He loves to go out and talk business during lunch hour. I found that out. Good luck."

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Doughboy Industries, New Richmond, Wisconsin, keeps production high, saves on replacement costs and reduces screen breakage with PACAL Hard Faced Hammers. PACAL hammer clusters can lower your costs on any grind in any hammermill. Write or call Hammer Division for information.

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NOW! NATIONAL ADVERTISING CREATES UNPRECEDENTED DEMAND!

Early this summer, farm papers carried the first publicity for THRAM . . . new anti-picking spray for poultry that curbs cannibalism overnight!

Reaction was instantaneous! Poultrymen everywhere wanted it. As a result, THRAM has now been used on millions of birds with spectacular results.

Now nationally-circulated poultry and farm papers are carrying the good news about THRAM to every poultryman in the country — creating demand unmatched by any poultry product you ever sold before!

To help you capitalize on the demand, Penick makes available counter displays, window streamers, ad mats and consumer leaflets . . . all the help you need to let your customers know that *you* have THRAM in stock now! Order THRAM through your regular distributor today!

THRAM is advertised *now* in:
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24 x 1 pints
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Definitions Given for New Law On Emergency Feed Deliveries

WASHINGTON — Recent publication of the regulations covering early and late deliveries of emergency drouth feeds under P.L. 85-312 has brought several inquiries from feed men about the law. Answers to some of their questions were covered in a recent news letter of the Grain & Feed Dealers National Assn. which quoted the law and some of the more pertinent regulations.

The law reads as follows:

AN ACT To authorize Commodity Credit Corp. to grant relief with respect to claims arising out of deliveries of eligible surplus feed grains on ineligible dates in connection with purchase orders under its emergency feed program.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Commodity Credit Corp., under such regulations as may be approved by the Secretary of Agriculture, is hereby authorized to grant relief to farmers and dealers in connection with claims arising out of early and late deliveries under purchase orders for drouth relief feed issued under the 1954, 1955, and 1956 emergency feed programs (Commodity Credit Corp., Emergency feed programs, relief, 71 Stat. 632, 71 Stat. 633), by recognizing as valid those purchases and deliveries of designated surplus feed grains and approved mixed feeds, which (a) were actually purchased by the farmer from the dealer on or after the date the Secretary declared the county, where the purchase order was issued, to be eligible for assistance under the emergency feed program, and (b) are found to have been physically delivered to the farmer not later than six months from the expiration date of the purchase order issued to the farmer.

Regulations

Some of the more important regulations and definitions are as follows:

Definitions:

(e) "Early deliveries" means purchases of feed by a farmer and deliveries thereon by a dealer on or after the date the county was declared to be eligible for assistance during a particular program year and within not more than 30 days prior to the date the farmer's application for the purchase order, on which credit is claimed, was approved by the FHA county committee.

(f) "Late deliveries" means physical deliveries of feed to a farmer after the expiration date of the purchase order, but not later than six months after such date: Provided, that the purchase order was transferred by the farmer to the dealer before its expiration date as part payment on an agreement to purchase such feeds and the dealer allowed the farmer credit for the applicable value of the purchase order.

(g) "Expiration date of the purchase order" means the following number of calendar days after the date the purchase order was issued under the respective Emergency Feed Program, plus, with respect to a particular purchase order, any extension of time heretofore granted by CCC: 1954 Emergency Feed Program—120 calendar days or such shorter period as shown on the purchase order by the ASC county committee. 1955 Emergency Feed Program—60 calendar days. 1956 Emergency Feed Program—60 calendar days.

When relief may be granted. (475.104 (a) Any claim by CCC against a dealer under the 1954, 1955, or 1956 Emergency Feed Programs will be adjusted to the extent that the following is established:

(1) That such claim includes early and late deliveries as defined . . .

(2) That as to any deliveries the purchase order was accepted by the dealer before its expiration date as part payment on the farmer's purchase of feeds;

(3) That actual, physical delivery was made of the feeds not later than six months from the expiration date of the applicable purchase order;

(4) That the dealer gave full credit to the farmer for the amount of the purchase order on which the early and late deliveries were made, and

(5) As to any amounts included in the application for relief, (i) the dealer has collected no portion thereof from the farmers, or (ii) if the dealer has collected any portion thereof from the farmers, the dealer has repaid to the farmers the amount so collected or the farmers, from whom such collections were made and who have not been repaid, consent to the application of the dealer for claim adjustment and to any refund by CCC to the dealer.

Adjustment of claims without application. (475.105) Any claim by CCC against a dealer under the 1954, 1955 or 1956 Emergency Feed Programs will, as to early and late deliveries, be adjusted by the ASC state office, without application by the dealer for claim relief, to the extent that information in the possession of CCC establishes that such deliveries meet the requirements . . . Provided, however, that the dealer (a) certifies that no part of the amount being considered for adjustment has been collected by the dealer from farmers or (b) if any such collection has been made, either certifies that the amount of such collection has since been repaid to farmers or files with the ASC state office written consent by the farmers to claim adjustment and to any refund by CCC to the dealer. If any portion of the amount by which the claim is being adjusted has been paid by the dealer to CCC, in order to obtain a refund thereof . . . the dealer must file with the ASC state office written request for such refund. As to any portion of a claim not adjusted as provided in this section, if the dealer believes that he can qualify for claim relief, he shall file an application for relief as provided . . .

Adjustment of claims with application. (475.106) As to any claim with respect to early or late deliveries not adjusted pursuant to No. 475.105 hereof application for adjustment of such claim may be made as follows:

(a) When to Apply. Applications by dealers must be filed within six months after the date the regulations in this sub-part are issued or within six months after the demand by CCC for payment of the claim is first received, whichever is later.

(b) Where to apply. Applications for adjustments of claims or refunds of amounts paid shall be made at the ASC state office which established the claim.

(c) Application by a dealer. The application by a dealer shall be in writing and shall include and be accompanied by the following:

(1) Amount of adjustment or refund requested.

(2) The identification of each purchase order on which credit is claimed including the name of the farmer to whom the purchase order was issued, the number of such purchase order, and the ASC office which issued it.

(3) The dates of the purchase and quantities and types of feed purchased.

(4) The dates of actual physical deliveries and the quantities and types of feeds delivered on each of such dates.

(5) The credits given the farmer on the purchase orders listed and the dates such credits were given.

(6) Such other information as will establish that the dealer is entitled to relief under the requirements of No. 475.104(a).

(7) A certification by the dealer (a form which should be obtained from the ASC office, and sworn before a notary.)

(8) The application shall be accompanied by any documentary evidence of purchase and delivery which the dealer desires to present including, but not limited to, sales slips, sales tickets, invoices, and delivery slips or certified or photostatic copies thereof, photostats of books or records of the dealer, or affidavits from farmers or others with actual knowledge of the facts, sworn to as true and correct . . . Where the dealer has collected from farmers any amounts included in the application and not repaid to the farmers the amounts so collected, the application shall be accompanied by written statements of the farmers consenting to the dealers application and refund by CCC to the dealer.

Claims settled by or pending in the Department of Justice. (No. 475.111) Notwithstanding any provisions in these regulations, as to claims settled by or pending in the Department of Justice, CCC shall forward the determination as to any adjustment to the Office of the General Counsel for transmittal to the Department of Justice, and no refunds based on such determinations shall be allowed except to the extent the Department of Justice concurs therein.

QUARTERLY DIVIDEND

DENVER—Colorado Milling & Elevator Co. will pay a quarterly dividend of 35¢ a share Dec. 2 to stockholders of record Nov. 15. This is the same rate as for previous quarters.

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TEXAS HIGHLIGHTS—Shown here are some of the speakers for the recent Texas Nutrition Conference and others who took part. In the first picture, left to right, are: Front row—R. F. Elliott, American Cyanamid Co., Pearl River, N. Y.; J. K. Loosli, Cornell University; W. T. Berry, Texas A&M; Jim Leker, Staley Milling Co., Kansas City; Wayne Nusbaum, president, Texas Feed Manufacturers Assn. Back row—R. E. Leighton, Texas A&M; A. A. Heidebrecht, Paymaster Feed Mills, Abilene, Texas; H. O. Kunkel, Texas A&M; R. W. Luecke, Michigan State University; J. C. Miller, dean, school of agriculture, Texas A&M; J. H. Bridges, Kern County Land Co., Bakersfield, Cal. In the second picture, left to right, are: Front row—W. T. Diamond, secretary of the American Feed Manufacturers Assn.; John McVay, Alamo Feed Mills, San Antonio, Texas; Wayne Nusbaum, Ralston Purina Co., Ft. Worth; Paul R. Ray, Save Way Feed Mills, Chickasha, Okla.; Ben Schmitt, Ft. Worth. Back row—J. R. Couch, Texas A&M; Lee Meyer, Meyer Grain Co., Houston; R. L. Kathe, AFMA, Chicago; Warren LeBourveau, Mathis (Texas) Grain & Elevator Corp.; Lloyd S. Larson, Midwest Feed Manufacturers Assn., Kansas City.

CHANGING PATTERN

(Continued from page 52)

izes in feeding caged layers," said the new owner. "It makes bulk deliveries and has its own staff of poultry experts. I can't touch this trade, but I found a lot of small farmers who don't care to buy in bulk quantities. I put on a route, solicited this trade, and now have the business on a paying basis. My wife has added pet supplies and seeds and garden equipment, and this part of the business is also paying off."

Mill Expansion

These small stores are not the rule, however. Most of the successful owners are those who have added modern equipment and begun bulk delivery and other services. In eastern Colorado, one mill owner added new mixers and pellet mills, bought large delivery trucks and increased his trade radius from 25 to 50 miles.

"Farmers are too busy to haul feed anymore," he said. "They don't even want it stored in farm bins nowadays, but want us to unload it in the big automatic feeders. 'Why move feed twice,' they say, 'when the mill can put it directly in the feeders for us'."

In New Mexico a feed store owner is putting a complete turkey ration into the feeders of a 25,000-turkey farm.

"It costs only a few cents more per hundred," said the turkey owner, "and it saves me a lot of labor."

In Idaho a man who had been in business only two years has spent most of that time rebuilding a run-down mill. He added extra storage, two mixers, two pellet mills and other equipment. By doing so he had almost doubled his business over the first year.

Need Right Equipment

"You've got to sell more and do it cheaper," he said. "And the only way to reduce production costs is to have the right machinery."

This man had kept accurate figures on costs and profit. He found that when he manufactured 500 tons of feed a month, the expenses amounted to $8.50 a ton. With his new equipment he had put out 2,000 tons at a per-ton cost of only $4.52. And he did it without adding any extra mill employees.

Another trend, in addition to larger and more complete mills, is the practice of conducting feeding tests. In some cases, the mill owners have bought land and have run extensive feeding experiments. Not only do they make a profit for themselves, but the scientific feeding experiments have attracted close attention from feeders, dairymen and poultry owners.

A Colorado owner who had been supplying feed for several hundred thousand turkeys for farmers now has a large turkey farm of his own. By doing a good job with his own

(Continued on page 73)

"I never worry about QUALITY, SERVICE, or PRICE...

In my business as an elevator man, I deal with people as much as I do with product. It means a lot to me to know that my suppliers appreciate my business, understand my equipment problems and have the reputation of being leaders in their field.

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MR. FEED MANUFACTURER: This key ad in 12 leading farm magazines launches a new fall campaign to boost your 'Stilbosol' feed sales. Ask your Lilly representative about your tie-in merchandising kit featuring new sales aids. Put it to work for you!

18,000,000 cattle fattened with 'Stilbosol' in feed

Cost-cutting feeds with 'Stilbosol' continue to gain rapid acceptance in nation's feedlots. This fall, feeders need this proved gain-booster more than ever.

by Eugene S. Hahnel

More than 18 million steers and heifers are estimated to have gone to market from feedlots where rations with 'Stilbosol' were used. Today, about 80% of the cattle in feedlots are getting 'Stilbosol'-fortified supplements. All this has happened in less than 3 years!

Certainly such immediate and wide acceptance must be due to a great need . . . successfully met. In the past, that need was *to get more beef at less cost.*

During the 1957-58 feeding season, the basic need will be the same . . . it'll just be *more urgent.* Here's why: Feeder cattle are hard to find this fall. They're costing more money. Feeding margins will be thin if old-style methods are used. Yet, with fewer cattle on the market next summer and fall, the profit outlook can be bright for those who use modern, *tested* methods to cut cost of feedlot gains. It should be a year when the best methods of feeding and management make the most sense . . . and the most money.

These 10 basic reasons show why 80% of the market cattle are on feed with 'Stilbosol' . . . and more are getting it every day. They also show why it will pay *all cattle feeders* to take further advantage of this modern, tested method of slashing beef-feeding costs:

1 **Produces significant extra gains** with all kinds and types of feedlot cattle.

2 **Makes more beef per pound of feed,** thereby cutting cost of gain and widening profit margins for alert cattle feeders.

3 **Safe and effective for both** steers and market heifers. Reduces cost of gain for both.

4 **Fits all types of feeding programs,** including long, medium and short feeds with high-grain, medium-grain and high-roughage rations.

5 **Carcass quality is excellent** . . . equal or better than cattle fed rations without 'Stilbosol.'

6 **Assures steady, even intake** of minute amounts of the gain-boosting hormone for maximum benefits . . . thus preventing undesirable side effects.

7 **Demands no extra labor.** Cattle are handled exactly the same as before, regardless of method of feeding.

8 **Requires no management changes.** There's no weight-depressing interruption in established feeding programs when 'Stilbosol' is used in feed.

9 **Cattle do not lose weight gains** by being upset. There's no stress from driving, penning, or restraining. There's no extra bother. Cattle get the hormone in the natural way . . . in the feed.

10 **The most economical way in the long run** is with 'Stilbosol' fed in the supplement. When all costs are considered, the "in-feed" way produces the most high-quality beef at the least cost. It gives the cattle feeder the best chance for the greatest profit margin in his entire beef-feeding operations.

1 Produces significant extra gains. Merle Rubendall, Fonda, Iowa, has fed cattle for 13 years. He's also a cattle buyer for an Iowa meat packer, purchasing more than 30,000 head a year. "I feel that 'Stilbosol' has given me an extra pound of gain a day ever since I've used it," he reports. "My best lot made 4.1 lbs. daily gain on a 108-day feed, graded choice and dressed 62.11%. I think 'Stilbosol' is the best addition I've ever made to my feeding operation. I've used it on both steers and heifers and am certainly satisfied with 'Stilbosol' in my supplement. Most feeders that I talk to when buying cattle are using 'Stilbosol' in feed," reports Rubendall, who feeds both Angus and Herefords.

2 Makes more beef per pound of feed. Lou (right) and Bob Myers feed 400 head a year. They've fed 'Stilbosol' since December 1954. The Frankfort, Indiana, feeders recently topped the market with 37 head that had averaged 2.89 pounds daily gain for a 91-day feed. Cost per pound of gain was only 14½ cents . . . pay weight to pay weight. "'Stilbosol' has been a big help to our cattle-feeding operation," the Myers' agree. "We feel our cattle have done far better on 'Stilbosol' than ever before. We watch our dressing percentages closely and they've dressed between 59% and 62%."

3 Safe and effective for both steers and heifers. Leslie Larson, Erwin, S. D., feeds 150 head a year, two-thirds of them heifers. Larson fed 53 heifers for 225 days. Although full-fed but 75 days, average daily gain for the entire period was 2.75 pounds. Over-all cost of gain was only 15¢. "My experience with 'Stilbosol,' whether on steers or heifers, has shown cheaper gains and extra gains," says Larson.

4 Fits all types of feeding programs. Bill Van Hoozer (above) and father, Claude, operate commercial feeding yards near St. Joseph, Missouri. Being custom feeders, they handle many kinds of cattle on different feeding programs and lengths of feed. "We've fed at least 8,000 head with 'Stilbosol' and it's made a big difference in our daily gain and in our cost of gain. We wouldn't operate without it!"

5 Carcass quality is excellent. H. W. Larson (left) and son, Einer, have been Montana meat packers and cattle feeders for 50 years... able to observe the merits of 'Stilbosol' from feedlot to cooler. Here's their verdict: "Feeds with 'Stilbosol' are a great thing for the cattle-feeding business. Dressing percent and killing quality of our cattle are excellent since using 'Stilbosol' in supplement."

6 Assures steady hormone intake. A. E. Jones (right) and Jerry Dunlap feed cattle near Bigelow, Kansas, and have used 'Stilbosol' since 1954. Last year they tested another hormone method on 64 head. "Our results have been more uniform with 'Stilbosol,'" reports Jones. He believes that 'Stilbosol' in feed gave him better gains over the entire feeding period, with no bothersome extra labor or side effects.

7 Demands no extra labor. Wayne Smith, Naperville, Illinois, cut hand labor to the bone in his feeding operation by employing mechanical handling of the ration from silage to supplement. In addition to the other advantages of 'Stilbosol,' Smith likes the way it fits his labor-saving plans. Edwin Hibbs, Fonda, Iowa, joins in, "I like the added advantage of saving labor with 'Stilbosol' in feed."

8 Requires no management changes. Seldon Allison (left) of Guthrie, Kentucky, is impressed with the ease of getting 'Stilbosol'-fortified supplements to his cattle. "With 'Stilbosol,' I've experienced no need for a change in management practices," Allison emphasizes. "Such changes generally mean a loss in feeding time and depressed weight gains from disturbing my cattle. That means a loss in income."

9 Cattle do not lose weight gains by being upset. Kenneth Thompson, Alden, Iowa, weighs his cattle every 30 days and has noticed that unnatural disturbances cut weight gains. "I never want to disturb my cattle any more than I have to. That's one reason I like 'Stilbosol.' I also feel 'Stilbosol' in my supplement gives me steady control over the amount of hormone my cattle get," observes Thompson.

10 The most economical way in the long run. Henry Tietjens, Bryant, Iowa, made a key point when he said, "I could increase my gains in other ways, but the 'Stilbosol' way is much cheaper in the long run. 'Stilbosol' in feed increased my gains almost one-half pound and cut my cost of gain by 4¢ a pound. That's the difference between profit and loss these days. I can't afford *not* to feed 'Stilbosol.'"

Stilbosol

(Diethylstilbestrol Premix, Lilly)

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flocks, he has stimulated better management practices among the other turkey growers.

An Oregon dealer had done the same thing with cattle feeding, and it was mostly by this method that he had increased cattle feeding in his area by over 100%.

Larger Farms

Farming is also in a state of change, as small units are absorbed by the larger ones. An Idaho mill owner said the small 40 and 60-acre farms are slowly disappearing in his area.

"We're losing farmers but not acres," he said. "And these larger farmers are usually more intelligent and better managers. It means that to get their business, we've got to be just a little sharper and must know more about our business."

In some areas where small farms still dominate, a few feed mill owners have worked out a custom storage system for farmers. A Utah owner put in large steam rollers to roll barley and more than doubled his storage.

Now he rolls oats for the small irrigation farmers and stores it for them at 5¢ cwt. for each three months period. When they are ready to feed it, they come to the elevator with their own trucks or have it hauled to the farm. Not only has this been a lucrative practice for the feed mill owner, but he has added greatly to his sales of concentrates and other feeds. He can now store 10,000 bu. a day during the harvest season, and the mill can roll 60,000 lb. a day.

The Service Factor

Despite the increased business gained by modernizing their plants, not all the owners were getting back their investment. One man who had added to his equipment was barely holding his own. He was quite pessimistic about the future and blamed his failure on the declining farm income and the fact that the profit margin in feed had shrunk.

Farmers in the area told a different story, however.

"He's got a nice plant," said one livestock feeder, "but he is still using horse and buggy business methods. He never comes out to see what we're doing. He spent so much money on the new equipment that he's trying to economize with cheap labor. His outfit can grind and mix feed, but not a single one of his men knows anything about feeding cattle. I need advice and help once in awhile, so I go where it can be found."

The main problem in most owners' minds is whether to modernize their plants and try to increase the volume or to remain as they are. Several stated that they would need a larger market to make the investment pay off. And if there is not enough market already in existence, could one be created? they asked.

A Dealer's Experience

A west Texas dealer faced this problem of fading markets a few years ago after a six-year drouth had

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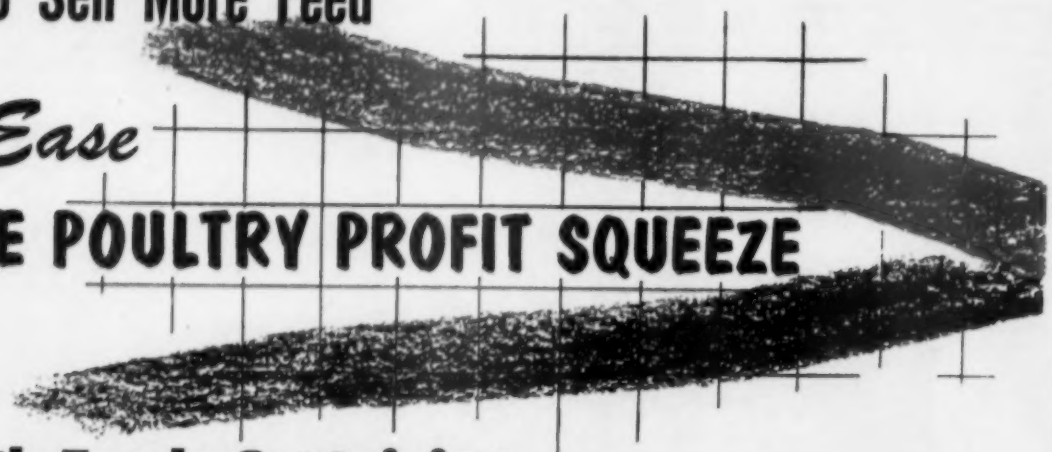

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In addition, Polystat improves coloring, feathering, and general appearance of birds . . . *increases market values*. In fact, it's been proven on millions of birds, only feeds containing Polystat do so much to increase profits for raisers . . . create more favorable conditions for selling feed.

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- Stimulates Growth
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- Increases Egg Production

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Layers develop fully, quicker, go into production sooner, lay up to 12 extra eggs per hen the first year. *No single feed ingredient costs so little and does so much as 3-Nitro.*

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forced ranchers to sell 75% of their cattle and sheep. The feed store man saw his million-dollar-a-year business drop month by month.

Yet he didn't give up easily. He had built it from a hole-in-the-wall feed store to one of the biggest in the area, so he began to analyze conditions. He wondered if there weren't some kind of livestock that the hard-pressed ranchers and farmers could raise that didn't require range grass.

He got some help from the feed company whose products he sold, and he talked to farmers, ranchers and food distributors. He had several sessions with his banker, and finally decided broilers might pay off. He helped finance a few houses, then more were added week by week.

As the local market became glutted, he went into partnership with another man, established a processing plant, added trucks and started delivering the frozen birds to other towns.

Now he feeds a million broilers a year, buys other thousands, then has them processed and delivered in two states. Before he promoted the business, there weren't 1,000 broilers a year grown in the county.

Must Adopt New Methods

After travelling 4,600 miles and visiting almost every major farming area in nine western states, I came home convinced that the feed store owner must adopt new business methods. He must equip himself to do a more specialized job.

As stated at the beginning, the small store may survive by changing over to a farm supply store. This is one part of the business the larger mills don't seem to want. One large mill owner in Arizona said he was getting entirely out of the farm store business and would concentrate on long hauls and bulk deliveries.

Everyone, it seems, is getting smarter in agriculture. The modern cattle feeder would not think of using the same methods his grandfather practiced—those of just using whatever kind of feed was available and paying no attention to minerals and proteins.

Throughout the area, the poultrymen, dairymen and swine producers are getting larger. They must produce more cheaply by putting out a larger volume. Their profit margin has been shrinking the same as that of the mill owner.

So the feed dealer is now beginning to serve a very intelligent and demanding group of clients. Unless he can furnish the many kinds of feed needed, and also some information and technical service along with them, then he will soon be numbered among those thousands of business casualties occurring every year.

OPENS NEW MILL

WEST MILTON, OHIO—Falknor Grain Co. has a new feed mill which the firm opened recently. Don Falknor, who is now heading the firm, is the third generation of his family in the firm. It was started by his grandfather.

Feed Firm Lists Arguments for Feed in Sacks

LAWRENCE, MASS.—Not enough attention has been given recently to advantages of delivery and handling of feed in sacks, an eastern feed manufacturer states. The H. K. Webster Co., Lawrence, Mass., said recently that there are a number of factors which should be noted and not lost sight of in favor of sacks.

The statement, in a discussion of bulk and sacked feed delivery, appeared in a company publication, "Blue Seal News Reel," edited by Dean K. Webster III.

"It seems that the advocates of bulk have been making all the noise and few voices have been raised to champion the virtues of sacks, which still account for about 90% of total manufactured feed tonnage," the article said.

The arguments for bulk, it is said, can be summed up in two main points: (1) economy and (2) convenience on the farm "under certain favorable conditions."

"Bulk delivery service by tank truck is efficient and economical in areas of heavy concentration of one type of feed consumption, such as broiler rations, and in such an ideal situation it is possible to prove a dollars and cents per ton saving at the point of delivery, the farm," the Blue Seal publication continues. "This saving is not the $5 per ton or more discount quoted for bulk, but amounts to nearer the actual net wear and tear cost of sacks delivered on a sound returnable-bag program—approximately $1.50 per ton.

"Trucking expense for tank truck service may well be higher than for conventional sack delivery, for two reasons: (1) tank trucks represent a very high investment, and (2) it is generally necessary to send them greater distances to encompass enough customers with sizable tonnage deliveries.

"As to convenience on the farm, this is something the farmer-feeder must determine for himself . . . If only a single type of feed is used, maximum convenience and economy are possible; if a number of types of feed are required, the saving will be less, or none. The actual monetary saving in the labor of emptying sacks of feed as against drawing from bins is very slight."

The Case for Sacks

The Webster firm listed the following as factors which it feels are arguments in favor of sacks:

"Flexibility. Most poultry farms, and dairy farms, require a diversity of rations. This variety must be maintained in inventory both at the dealer's warehouse and on the farm. With sacks, changes from one type of feed to another are readily made, gradually or quickly."

"Measurement of feed consumed. A decline in feed consumption will be

(Continued on page 76)

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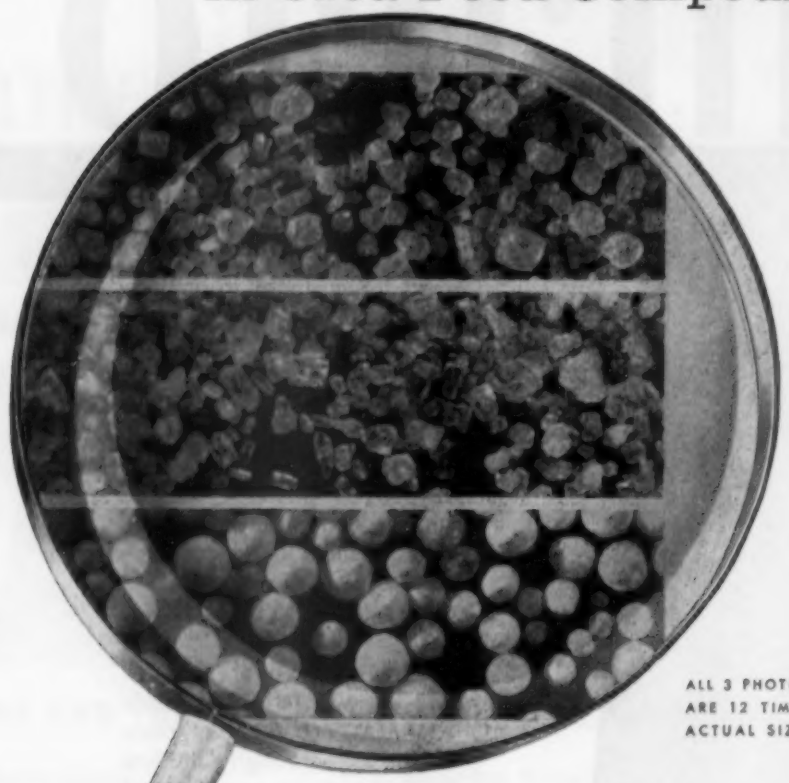
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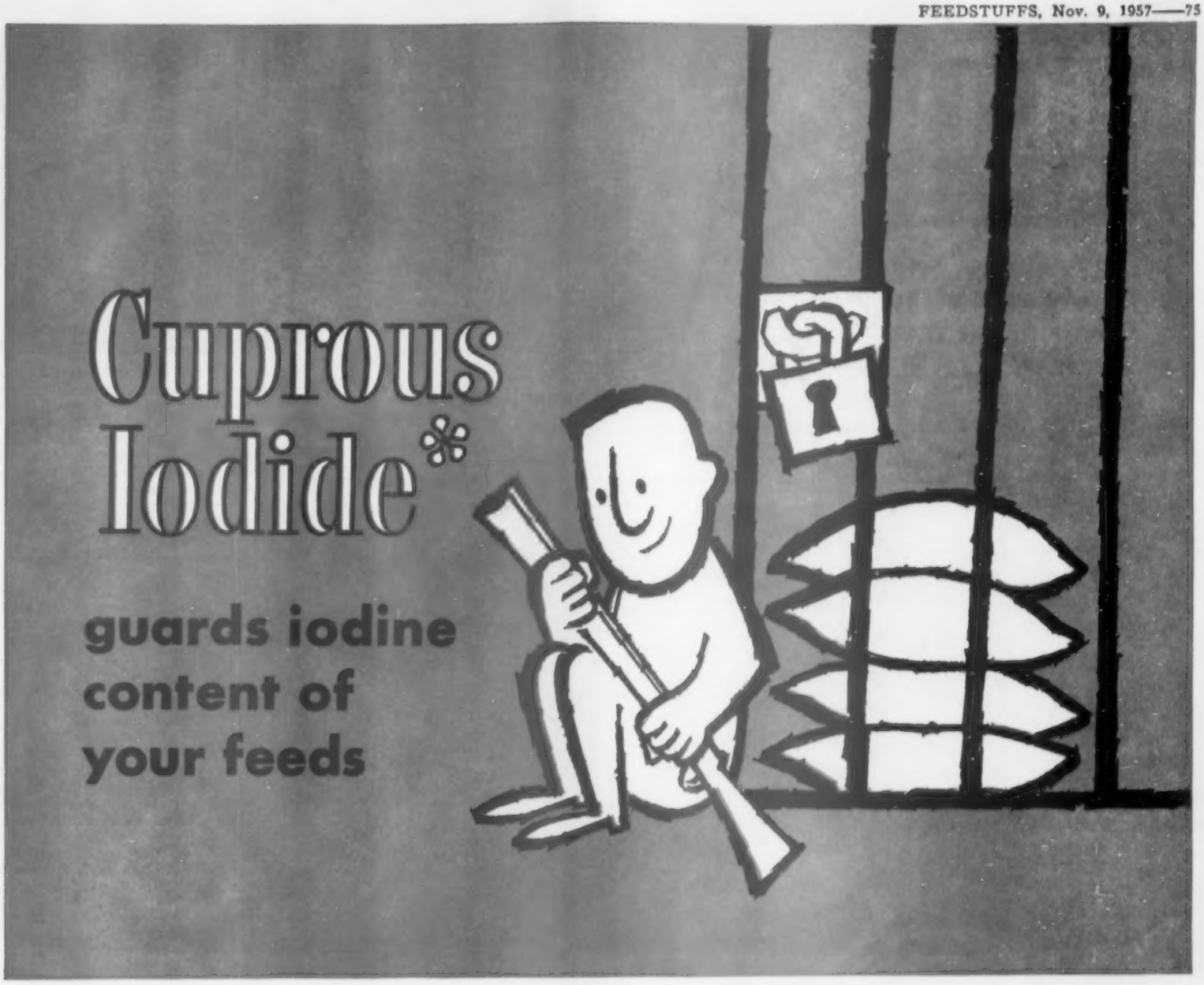


Protect your analysis from mill to feed bunk! Make your feeds do a better job. Use Morton Mixing Salts containing Cuprous Iodide.

Cuprous Iodide is a new and improved source of iodine for livestock and poultry feeds, patented for use by the Morton Salt Company (pat. no. 2,772,167). It is stable—without the need for a stabilizing additive—and it is not lost in pelletizing. Additional advantages are that the iodine has superior nutritional availability to livestock, and they retain it longer.

When your tag shows iodine as an ingredient, the iodine must be present wherever tests are made . . . in the laboratory, in your mill, at the feed dealer's, or on the farm.

Morton Salt, knowing the problems encountered with ordinary iodine compounds, looked for a better source of iodine, and found that Cuprous Iodide was far superior to other sources. Further tests by an independent research laboratory proved that Cuprous Iodide is a truly *stable* source of iodine, with improved availability and retention qualities.

Now, Morton offers this superior iodine compound to all feed manufacturers in Morton Trace-Mineralized and Iodized Mixing Salts. And Morton's nation-wide distribution enables you to get Morton Mixing Salts anywhere in the United States.

In addition to Trace-Mineralized and Iodized Mixing Salts, Morton also makes extra-free-flowing Special Mixing Salt.

Morton Trace-Mineralized Mixing Salt contains: **Salt, Manganoferro Phosphate, Ferrous Carbonate, Copper Oxide, Cobalt Oxide, Cuprous Iodide, Zinc Oxide, Propylene Glycol.**

Mail coupon for information on Morton Mixing Salts

Morton Salt Company
Dept. F-CI-119
120 S. La Salle St., Chicago 3, Ill.

Name_____

Company_____

Address_____

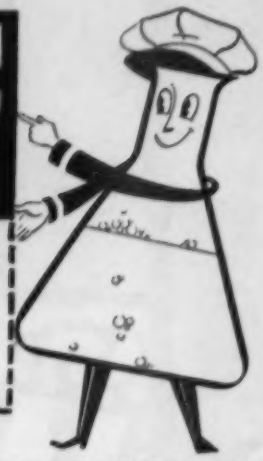
City_____

County_____ State_____

MORTON MIXING SALTS

Trace-Mineralized Mixing
Iodized Mixing
Special Mixing

SOLULAC
70% corn distillers solubles
30% corn distillers grains



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GRAIN PROCESSING CORPORATION
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Primary Fermentation Products
Riboflavin — Vitamin B-12 — GP-101, source of whey and other unidentified growth factors

much more quickly noticed when sacks are emptied into carriers or hoppers. Measurement of feed consumed, by counting sacks emptied, is convenient; measuring from bulk bins is inconvenient and difficult.

"Identification. New drugs and additives are each highly valuable for a specified purpose but potentially harmful for a different use. If several types of feed are required on a farm, instant identity of feed in branded, tagged sacks is a safeguard against costly errors.

"Inventory control. Feed in bins is not as readily inventoried as sacks on the floor. Danger of sudden exhaustion is greater and instant emergency delivery more difficult to obtain. Larger size of bulk deliveries can be a handicap to smaller feeders, or to larger feeders for special rations; freshness of feed should be more favorable with smaller stocks of feed in sacks; heating of feed is less a hazard in sacks and is more quickly noticed.

"Dealer warehouse service is more flexible with sacked feed. A balanced inventory at all times is facilitated, with medicated feeds for special purposes instantly available. Diversity of medicated mixes makes bulk storage impractical for all items, necessitating separate delivery service for many items in sacks."

The Webster publication went on to say: "It is fair to say that bulk delivery affords a limited cost saving and convenience for feeding heavy tonnages of one type of feed in concentrated areas; on the other hand, there are many compensating advantages to sacked feed service that should be realized and not forgotten. It is well to examine all aspects before committing oneself to either system . . . We might seriously ask ourselves whether this bulk delivery idea has been seized upon more as a tool for sales than for economic good. Bulk delivery may not too well stand the test of time except for the case of large tonnage for a single feed operation."

RECEIVES PLAQUE—Dr. James Gwin, right, manager of the marketing division at the Ralston Purina Co., received a plaque at the Northeastern Poultry Producer's Council's exposition in Harrisburg, Pa. The plaque, presented by Allen L. Baker, Pennsylvania state 4-H leader, was given to Dr. Gwin in recognition of his early work in leadership in 4-H activities in Pennsylvania.

Sportsman's Show Set For Kansas City Club

KANSAS CITY — Harold Ensley, "the sportsman's friend," will present the program at the next meeting of the Kansas City Feed Club. The television personality who shows fishing and hunting movies will appear Nov. 19 when the club meets at the Golden Ox Restaurant.

The club is also making plans for the annual Christmas dinner-dance which will be held Dec. 21 in the Town House Hotel, Kansas City, Kansas.

ADDS TO STORAGE

MONTEZUMA, KANSAS—Montezuma Cooperative Exchange has started construction of a 542,000 bu. addition to its present facilities here. Chalmers & Borton, Hutchinson, has the contract. The addition will consist of 20 concrete tanks with nine interstice bins. It will boost total storage of the firm to slightly more than a million bushels.

Proven Value

George Schmidt (center), with feed dealer Wilmer Lary (left), and Gene Gourley (right), Spencer Kellogg District Sales Manager, looking at Schmidt Brothers' grand champion herd.

It takes RESULTS to prove value. A protein supplement is better when it produces better livestock! Ask George Schmidt for an example.

George Schmidt with his brother Ferd feed each year about 450 head of Angus on their farm at Delmar, Iowa. They have won the carload grand championship six times at the Chicago International.

They feed Spencer Kellogg Linseed Oil Meal at the rate of one pound per day per head. They will tell you that its extra quality has something that gives cattle the condition that wins grand championships.

Such results are PRACTICAL proof of the value of better feeding and EXTRA value of Spencer Kellogg protein supplement quality. Famous S-K Linseed Oil Meal is still available for your best formula feeds.

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. . . plus equipment and supplies for the grain and feed industry.

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1955 University Ave. St. Paul 4, Minn.
Midway 6-4818

George W. Alstad

Pfizer Issues New Research Publication

TERRE HAUTE, IND.—A new publication in the agricultural research field, Agradata, is being issued by the agricultural research and development department of Chas. Pfizer & Co., Inc.

Dr. Herbert G. Luther, director of agricultural research for Pfizer, announced that the periodical will be published monthly and will be distributed to interested agricultural research workers in universities, government and the feed manufacturing industry.

Editor of the new magazine is George W. Alstad, who joined the information staff at the research and development center earlier this year.

The subject format of Agradata includes one major feature per issue of high current interest to agriculture. In addition, other important developments in the agricultural research field are reviewed in abstract form as is agricultural news of a more general nature.

Aside from U.S. circulation, about 6,000 copies of the first issue have been distributed by Pfizer International in English-speaking countries overseas, and the magazine is being reprinted in some 20 foreign countries.

Before joining the Pfizer staff, Mr. Alstad was assistant agricultural editor at Michigan State University. He also is former agricultural editor of the Arizona Republic, Phoenix.

Mr. Alstad holds bachelor's and master's degrees in agricultural journalism from the University of Wisconsin.

DECLARES DIVIDENDS

NEW YORK—The board of directors of National Distillers & Chemical Corp. has declared a quarterly dividend of 25¢ a share on the company's common stock, payable Dec. 2, 1957, to shareholders of record on Nov. 12, 1957. The board also declared a regularly quarterly dividend of $1.06¼ a share on the company's cumulative preferred stock, 4¼% series of 1951, payable Dec. 16, 1957, to holders of record on Nov. 15, 1957.

NOW..! LOAD or UNLOAD BULK FEED
with the PAMCO BACK SAVER

Attach this inexpensive AUGER UNIT to a grain box and you can handle any feed in bulk!

- Ideal for hoist trucks
- Complete hydraulic operation
- Can load as easily as unload
- Will handle bulk feed grain or pellets
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Conversion units can be mounted on your present grain box.

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3. Tag information for today's complicated feed tag requirements.
4. Complete feeder-instructions on how to use Vitamelk-fortified feeds, to best take advantage of their great built-in power.
5. Dawe's quality control laboratory is a remarkable help in solving special problems.
6. Merchandising and sales counsel.
7. Complete and continuing responsibility for applying the latest nutritional knowledge to your feeds.

COMPLETE PROGRAMS
for Poultry, Swine, Dairy Cattle, Beef Cattle, Turkeys

Let us figure the cost of Dawe's Vitamelk delivered to your mill. Write us.

Do you want to be absolutely *sure* the feeds *you* make are the best your customers can buy? That you offer complete, meat, milk and egg producing, new Nutrition Programs which will enable you to meet—and beat—competition of *any* size? Yet, feeds whose formulation and fortification are push-button-easy?

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You retain the economy of local mixing, yet take advantage of Dawe's big-scale, centralized, scientific nutrition research.

Dawe's specialized nutrition know-how is *yours—yet you pay for the Vitamelk only*—when you use Dawe's Vitamelk Programs.

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Worth Looking Into

New Products
New Services
New Literature

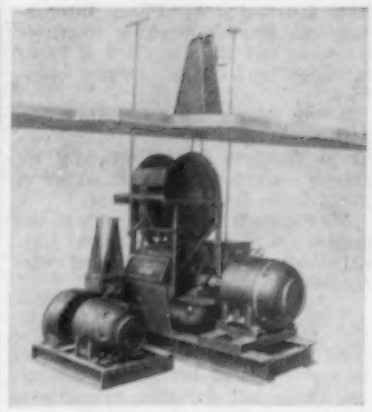
This reader service department announces the development of new and improved products, new services and new literature offered by manufacturers and suppliers. Claims made in this department are those of the firm concerned. Use the accompanying coupon to obtain the desired information.

No. 5876—Salt Product

The development of a new trace mineral salt-phenothiazine mixture—for treating internal parasites in cattle and sheep—has been announced by the Hardy Salt Co. The product, which the company guarantees to be highly palatable to animals, is called by the trade name—Hardy Saltrazine. The product is fed free choice in the pasture and feed lot. The company claims that it is an ideal mix for "low level" feeding of phenothiazine. Five trace minerals—cobalt, iodine, iron, manganese and copper—are contained in the product. Color illustrated literature, containing details about the product, will be sent free upon request. Check No. 5876 on the coupon and mail it to Feedstuffs.

No. 5864—Hammer Mill

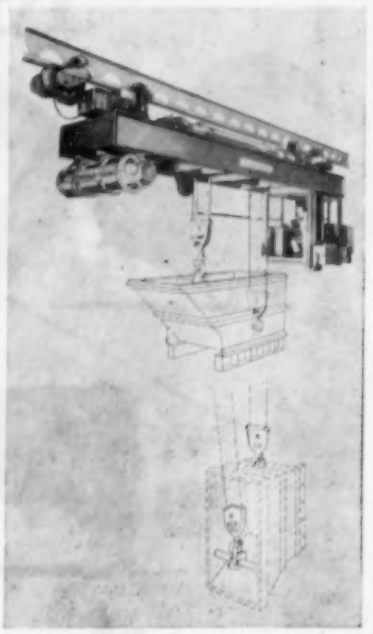
Model D-20 Kelly Duplex remote screen change hammer mill is the newest piece of feed mill and elevator equipment added by the Duplex Mill & Manufacturing Co. The company announcement states: "The mill cover can be opened by releasing a control rod on the service floor. Screens can then be changed by a single turn of a crank—without stopping the mill. Torn or clogged screens, regardless of the amount of damage, can be removed from the mill in this same manner for quick replacement. The entire mill has been built close to the floor to facilitate the conveying of grain and to permit a maximum pit area. A special intake arrangement prevents feed from being whipped into a floury dust. Ruggedly constructed of heavy steel throughout, the hammermill has a 20 in. wide throat, is furnished with a separate blower, and can be powered by



either one or two motors on the mill—and a separate motor on the blower. Secure full details by checking No. 5864 on the coupon and mailing it to this publication.

No. 5859—Hoist Carrier

A cab-controlled twin-hook hoist carrier provided with an auxiliary hoist for dumping has been built by the Cleveland Tramrail Division, the Cleveland Crane & Engineering Co. Of weatherproof construction for outdoor service, the unit will pick up tote boxes of materials, haul them



and empty by tipping. Various bulk materials may be handled. Hoisting and travel motions are controlled by the cab operator. The main hoist alone raises or lowers a tote box in upright position. Hoist speed is 35 f.p.m. Travel speed is 250 f.p.m. Variable speed drum controllers are provided. The capacity is 12,000 lb., i.e., 6,000 lb. per hook. Other carriers of different capacities can be furnished. Secure details by checking No. 5859 on the coupon and mailing it to this publication.

No. 5853—Wormer

A new phenothiazine wormer for cattle and sheep has been announced by VyLactos Laboratories, Inc. The new product, known as "Worm-O-Lass 120" contains 120 grams of phenothiazine per pound, dehydrated with corn oil meal. A special process coats each phenothiazine particle in molasses, resulting in exceptionally high palatability, according to the manufacturer. "The formula was especially designed to provide feed manufacturers and mixers with a palatable, concentrated phenothiazine product which they could use in producing wormer feeds for either therapeutic or low level feeding," it was announced. A special bulletin giving detailed instructions for manufacturing, labeling and feeding is offered by the manufacturer. Secure it by checking No. 5853 on the coupon and mailing it to Feedstuffs.

No. 5860—Automatic Sack Silo

An automatic system of disposing of sacked material when bagging machines pile up bags too quickly for the warehousing crew has been announced by Buhler Brothers. The sacks from the sacking machines are conveyed by means of an automatic distributing system to the chutes allotted to a particular grade product. A signal announces the last chute to be loaded to capacity, the company announcement states. The packer may then shift to another product. The chute outlets and loading devices are directed from a central control panel. It is possible for one man to operate three loading places. The number of sacks loaded and the number of sacks of each product remaining in the chutes may be checked at the switchboard. Secure full details by checking No. 5860 on the coupon and mailing it to this publication.

No. 5861—Reference Guide

More than 1,500 compounds, along with their specifications, are listed in the "Reference Guide and Price List" published by Mann Research Laboratories, Inc. Company officials say that a research worker, by using the combined reference guide and price list, can determine the exact quality of any of the biochemicals listed. After receipt of the material, the exact assay of which is printed on the label of its container, the biochemist can verify its relative quality with the theoretical value listed in the reference guide, company officials state. Secure the guide by checking No. 5861 on the coupon and mailing it to this publication.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to Feedstuffs.

No. 5799—Self-adhering numbers, letters and signs for marking bins and tanks, Westline Products division, Western Lithograph Co.

No. 5801—Combination portable mill and mixer, Iowa Portable Mill Co.

No. 5802—Granular calcium carbonate, Calcium Carbonate Co.

No. 5803—Shear pin drive for corn crusher, Woodbury Sheet Metal Co.

No. 5820—Edible, colored identification wafers for identifying bulk feed, Bulk Feed Identification Co.

No. 5821—Antibiotic supplement for use in feed and drinking water, Pabst Brewing Co.

No. 5822—Dust collector, Aget Manufacturing Co.

No. 5823—Speed reducers, J. B. Ehrsam & Sons Manufacturing Co.

No. 5824—Pamphlet on an evaluation of trace mineral compounds, Morton Salt. Co.

No. 5825—Laboratory mixer with a capacity of about 50 lb., Rapids Machinery Co.

No. 5826—Rat and mouse control, O. E. Linck Co., Inc.

No. 5827—Plastic dot application to the dragging surface of cotton pick sacks, Bemis Bro. Bag Co.

No. 5828—Chlordane squeeze duster, Hess & Clark, Inc.

No. 5804—Circular on the status of the use of animal fats in feeds, American Meat Institute Foundation.

No. 5805—Disease control in turkeys and poultry, Hess & Clark, Inc.

No. 5807—Catalog of poultry pharmaceuticals and specialty drugs, Eastern Laboratories, Inc.

No. 5808—Automatic cage fountain for poultry and small animals, Miller Manufacturing Co.

No. 5809—Anticoccidial substance and coccidiostatic growth stimulant combination, Dr. Salsbury's Laboratories.

No. 5810—Therapeutic formula for

Send me information on the items marked:

- ☐ No. 5853—Wormer
- ☐ No. 5859—Hoist Carrier
- ☐ No. 5860—Automatic Sack Silo
- ☐ No. 5861—Reference Guide
- ☐ No. 5864—Hammer Mill
- ☐ No. 5876—Salt Product

(PLEASE PRINT OR TYPE)

Others (list numbers) .....

NAME .....

COMPANY .....

ADDRESS .....

SLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS PERMIT No. 2
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Feedstuffs

P. O. Box 67,

Reader Service Dept. Minneapolis 1, Minn.

treatment of respiratory diseases in poultry, Abbott Laboratories.

No. 5811—Symposium booklet on mineral elements, International Minerals & Chemical Corp.

No. 5812 — Blackhead treatment, Merck & Co., Inc.

No. 5813—Three-step program for controlling internal parasites in animal herds, International Salt Co.

No. 5814—Automatic feed mixing plant which uses a punch card, Buhler Brothers.

No. 5815—Punched card system for batching operations, Richardson Scale Co.

No. 5816—Calculator for grain and feed company figure work and computing, Victor Adding Machine Co.

No. 5817—Portable electric sewing machine, Burrows Equipment Co.

No. 5818—Bag packer with jouncing action, Richardson Scale Co.

No. 5819—Plate magnet for tramp iron separation, Stearns Magnetic Products.

No. 5829—Corrugated bulk container for holding 1,000-1,500 lb. of a product, Gaylord Container Corp., Division of Crown Zellerbach Corp.

No. 5831—Grain bin ventilating ducts, Lennox Farm Division.

No. 5832—Machine for testing grinding behavior of grain and other granular products, MIAG Northamerica, Inc.

No. 5833—Electric vibrator for bins, chutes and hoppers, Cleveland Vibrator Co.

No. 5834—Grain roller mill, W-W Grinder Corp.

No. 5835—"All-purpose" roller mill, Peerless Equipment Co., Inc.

No. 5836—Bulk loader, 25-ton per hour capacity on grains, feeds, etc., Runco Corp.

No. 5837—Poultry house literature, Western Production Co.

No. 5838—Towing tractors, Frank G. Hough Co.

No. 5839—Bulletin on belt conveyor idlers, C. O. Bartlett & Snow Co.

No. 5840 — Overland controller, Ralph C. Gardner & Co.

No. 5844—Wet-dry vacuum cleaner line, Clarke Sanding Machine Co.

No. 5846—Phenothiazine in salt, Morton Salt Co.

No. 5842—Bulk material level control device, Bin-Dicator Co.

No. 5843—"Airstream" conveyors for bulk handling, Dracco Corp.

No. 5845—Expeller trouble shooting manual, V. D. Anderson Co.

No. 5847—Livestock and meat industry reference book, American Meat Institute.

No. 5849—Auger unit for attaching to a grain box for handling feed in bulk, Productive Acres Manufacturing Co.

No. 5850—30-in. diameter vibrating screen separators in 1-, 2- and 3-deck models, Southwestern Engineering Co.

No. 5851—Livestock and poultry disease treatment with sulfathiazole, U.S.P., solublized, Eastern Laboratories, Inc.

No. 5852—Tube squeezer for mastitis treatment, Chas. Pfizer & Co., Inc.

No. 5854—Feed mixing salt, International Salt Co.

No. 5855—Coarse ground corn sample, Fruen Milling Co.

No. 5856—Folder on rolled grain advantages, Roskamp Huller Manufacturing Co., Inc.

No. 5868—Distillers' feeds formulas, Distillers Feed Research Council.

No. 5869—Brochure on "Dynafac", Armour & Co.

No. 5870—Multi-purpose tank car, Union Tank Car Co.

No. 5871—Feed flavor, Flavor Corporation of America.

NEW FEED STORE

LONG PRAIRIE, MINN.—Ned Norris and Darrel Rosenow have opened a new feed store and hatchery here. The grand opening was held Oct. 22.

When This Happens...

YOU NEED A **FORDS** VERTICAL **MIXER**

★ **Designed For Fast Loading and Unloading *Without Bridging***

★ **Thorough Uniform Mixing**

★ **Dust-Tight Positive Bagger**

Special agitating arms prevent bridging and assures quick, clean emptying of mix. Easy to install and operate with present equipment. Loads top or bottom —clean, fast . . . no waste. "Flinger" at top of conveyor tube thoroughly distributes ingredients—cuts mixing time. Bagger has positive, non-jamming cut-off valve, operating in a dust-tight housing. Ball bearing equipped screw conveyor is "balanced" for quiet, smooth operation. Motor mounted as desired. All-steel, electric welded construction throughout. Available in 3 capacities: 2000, 3000 and 4000 lbs.

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Chicks grow faster

when feed contains **MANGANESE**

When feed is fortified with Tecmangam, it is fortified with manganese—a necessary growth element.

Manganese helps in many ways. It protects against perosis. It helps chicks gain faster. It reduces shell breakage. It increases egg production and hatchability.

Free-flowing, non-dusting Tecmangam is the clean, economical way to add manganese to feeds deficient in this element. It contains 75-78% manganese sulphate, is completely soluble and readily assimilated. Use at least one pound per ton of feed.

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Eastman CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE, subsidiary of EASTMAN KODAK COMPANY

Value of Farm Land Hits New Record

WASHINGTON—Farm real estate values stood at the highest point in the history of this country July 1 after a 12-month period that showed the biggest jump in real estate values in six years.

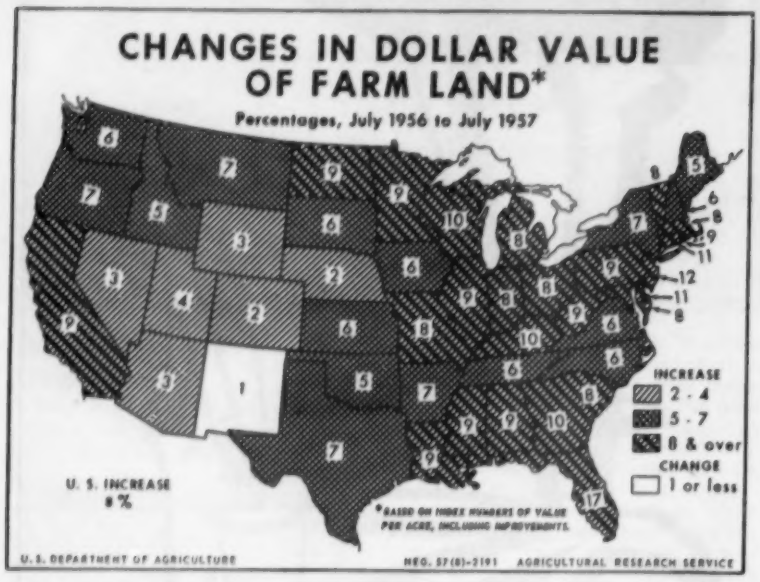
CHANGES IN DOLLAR VALUE OF FARM LAND*
Percentages, July 1956 to July 1957
INCREASE
2 - 4
5 - 7
8 & over
CHANGE
1 or less
U. S. INCREASE 8 %
*BASED ON INDEX NUMBERS OF VALUE PER ACRE, INCLUDING IMPROVEMENTS.
U.S. DEPARTMENT OF AGRICULTURE
NEG. 57(8)-2191 AGRICULTURAL RESEARCH SERVICE

Figure 1

The index of average value per acre, as reported in the Farm Real Estate Market report issued by the U.S. Department of Agriculture, reached the record high of 151, when compared to a 100 base for the years 1947-49, and 253, when considered in terms of the 1912-1914 average. The index of 253 is 46% over the 1920 peak.

All 48 states shared in the 1956-57 12-month rise, with 47 of them showing an increase of 2% or more. The largest increases generally were in the eastern half of the nation. (See Figure 1.)

Generally favorable crop prospects as of mid-1957 and pressures to enlarge existing farms were the dominant forces in the agricultural areas. In some areas the conservation reserve had a part in raising the value of lower quality land. In the non-farm sector, the continued high level of business activity and the slowly rising price level, along with the need for space by the expanding economy, continue to add strength to market prices of farm land.

The market supply continues to be at a low level, but demand continues strong, according to reporters who said inquiries concerning land for purchase were more frequent during the spring of 1957 than a year earlier. These same observers expected the price to continue to rise during the past summer and this fall.

Here is a look at a few of the forces and conditions at work in this booming real estate market:

Market Forces

Generally favorable crop prospects during the spring and early summer were responsible for a part of the increase, particularly in many central and western states. States most severely affected by the drouth in 1956 were those which generally showed the smallest increase. Irrigation water supplies this year—the best in years—were another factor.

Other factors affecting land values were those found in the non-farm sector of the economy and in advancing farm technology. These include the rising general price level, dispersal of industry and the need for living space.

While the value of farm land adjacent to large population centers is determined by factors unrelated to the returns of farming, the value of this land indirectly affects agricultural land. The reason is that the farmer selling land near urban areas often is interested in continuing farming operations and is in a position to pay a higher price for farm land in agricultural sectors.

Increasing technology boosts the value of farm land by bringing on a desire for increasing the scale of operation, which in turn means a desire for more land and active bidding for it.

The conservation reserve program is thought to be a cause of higher prices for lower grade land. Often farmers will buy it to satisfy the the conservation reserve program while continuing to maintain their regular farming operations.

Market Developments

In many areas, the same factors that contribute to a strong demand for land also tend to reduce the acreage of land offered for sale. Most farm land buyers are farmers, and the factors that make land attractive

USE Worm O Lass "120"
TO MANUFACTURE YOUR OWN
CATTLE & SHEEP WORMER
120 GRAMS PHENOTHIAZINE PER LB.
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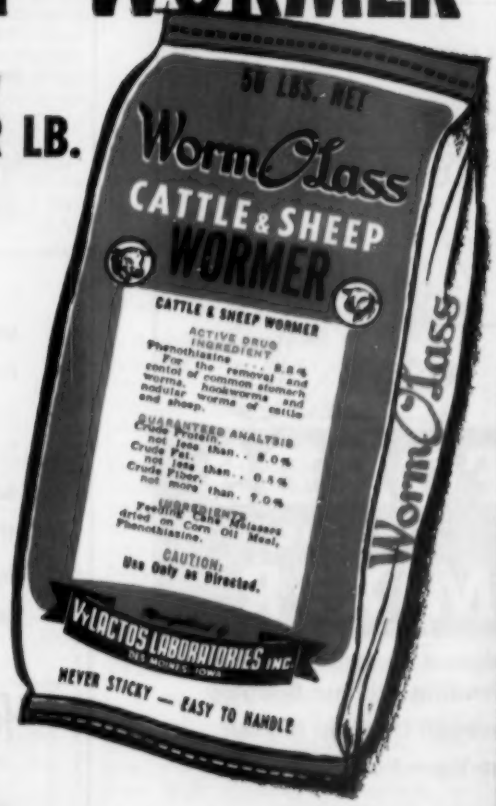
50 LBS. NET
Worm O Lass
CATTLE & SHEEP WORMER
CATTLE & SHEEP WORMER
ACTIVE DRUG INGREDIENT
Phenothiazine ... 8.0%
For the removal and control of common stomach worms, hookworms and nodular worms of cattle and sheep.
GUARANTEED ANALYSIS
Crude Protein, not less than... 8.0%
Crude Fat, not less than... 8.0%
Crude Fiber, not more than... 9.0%
INGREDIENTS
Feeding Cane Molasses dried on Corn Oil Meal, Phenothiazine.
CAUTION:
Use Only as Directed.
Vy-LACTOS LABORATORIES INC.
DES MOINES, IOWA
NEVER STICKY — EASY TO HANDLE
Worm O Lass

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Include the term "defluorinated phosphate" on your registration forms, bags and tags, and you can interchangeably formulate with *either* defluorinated or dicalcium phosphate.

The AAFCO definition states: "**Defluorinated phosphate** includes either calcined, fused, or precipitated calcium phosphate. It shall contain not more than one part of fluorine (F) to 100 parts of phosphorus (P). The minimum percentage of calcium (Ca) and Phosphorus (P) and the maximum percentage of fluorine (F) shall be stated on the label. The term '**Defluorinated**' shall not be used as a part of the name of any product containing more than one part of fluorine (F) to 100 parts of Phosphorus (P)." (Adopted 1952.)

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	Phosphorus	Calcium	Fluorine
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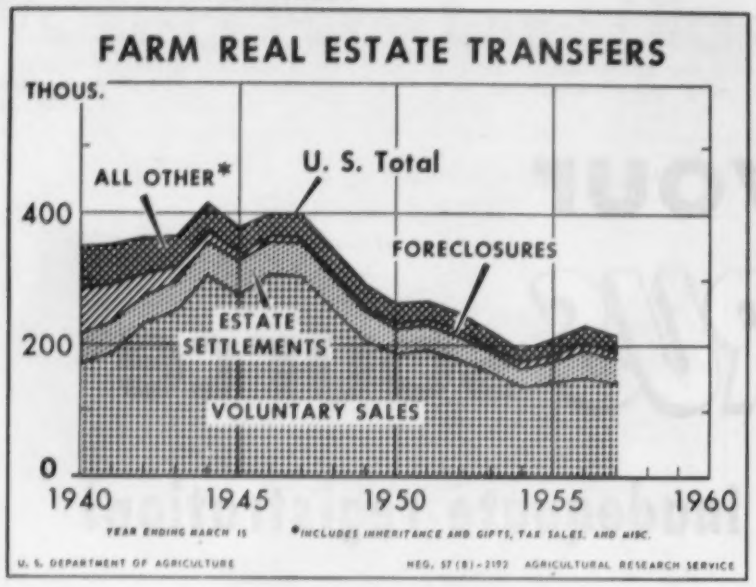

Figure 2

to buy also make it attractive to hold.

A March, 1957, report shows that the number of farms for sale at that time was about the same as a year earlier. There was some variation over the country depending on crop conditions, but for the nation the change was slight.

At the same time, however, the inquiries about farms for sale were on the increase.

Transfers of ownership of farms occurred at the rate of 47.8 per 1,000 farms during the 12 months ended March 1, 1957. These rates indicate a change in ownership of about 216,000 farms. The previous year 224,000 changed hands.

Voluntary sales of farm land were at the lowest rate since 1953. The rate was 31.4 farms per 1,000. However, the level was higher than the rate recorded during any year between 1921 and 1936. (See Figure 2.)

Foreclosures, including assignments to avoid foreclosure, bankruptcies and related defaults were at the rate of 2 per 1,000 in the 12 months ended in March. This was a slight decline from the previous year, but was the same as it was two years earlier.

The number is higher than for any year between 1945 and 1954, but it is low when compared with the 1930's and early 1940's. The all-time high occurred in 1932 when 223,000 farm owners had to give up their farms. During the past year the number was 9,000. The rate of foreclosures was higher in the southeast, Delta and southern plains states. In the latter region the rate was the highest since the spring of 1943. Tax sales, though higher than any time since 1946, were still at a very low level of 0.7 farms per 1,000 compared with the high of 15.3 farms per 1,000 in 1932.

Use of Credit

An estimated 70% of all purchases of farm land were financed with some form of credit during the 12 months ending in March. This is an increase of 4% over the previous year and marks the sixth consecutive year with increase in credit use.

Sales contracts made up 30% of credit-financed purchases. This form of credit has shown a steady growth since 1946, and it is expected to continue to increase.

Total farm mortgage debt Jan. 1, 1957, was $9,902 million, up 9% over the previous year. The 1957 level was 7% below the 1923 all-time peak of $10.8 billion, but was about twice as high as the 1946 low. The total mortgage debt is only 9% of total value, however.

Regional Outlook

The outlook by regions of the nation for farm real estate values in time to come depends on general economic trends, local weather and crop conditions, acreage allotments, price support levels, and extent of non-farm demand. Here is a look at the various regions of the country as given in the report:

Northeast — The rural-urban complex in much of this area prevents a clear distinction between agricultural and nonagricultural values. Nonfarmers continue to seek smaller farms for homes, and this determines competition.

Corn Belt—Land values have been boosted by favorable crop prospects, improved prices, the tight supply of land and desire to expand present farming units. Some non-farm demand exists in the areas near cities. The conservation reserve, however, is not seen as a very significant force in land prices. Values increased the past year by 8% in five states.

Lake States—Much the same as the Corn Belt. Participation in the soil bank has been higher, and conservation reserve payments offer more incentive. Average value increase for the states was 9%.

Appalachian and Southeast—Much of the strength in the land market in this region is due to expansion of industries to rural areas, improvements in highways and the acreage allotment program for major crops. Tobacco, cotton and peanut allotments have become increasingly important in determining market prices for many farms. The soil bank has aided demand and prices for poorer farms.

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Nat Kessler

CHIEF ENGINEER — The appointment of Nat Kessler as chief chemical engineer of the A. E. Staley Manufacturing Co. was announced by W. B. Bishop, Sr., technical superintendent of the Decatur, Ill., corn and soybean processing firm. He succeeds Dr. George N. Cornell, who was recently named director of a newly-formed operations research department. Mr. Kessler has been acting head of the chemical engineering section since the first of the year, while Dr. Cornell was on special assignment. Mr. Kessler is a graduate from Washington University, St. Louis, and he joined Staley's after completing work for his master of science degree there in 1944. He was a chemical engineer at the Decatur plant until 1951 when he was named technical supervisor of the firm's Painesville, Ohio, plant. He returned to Decatur in 1953 as senior chemical engineer.

Demand for homesites has also played a big part.

Great Plains—The chief factor affecting land prices in mid-1957 was crop conditions. A year earlier drouth lay over much of the area. Farm enlargement has been important, and irrigation and water supplies are big factors. The soil bank program has also had a considerable effect in most states of the region. The market for land in North and South Dakota has been affected most by the trend, and the extent of participation has been highest in these states.

West—Conditions vary widely. In many areas the encroachment of nonfarm uses is creating new demand. Because irrigation supplies were short in some areas, those areas had reduced demand for land. Soil bank payments have played a part in boosting prices.

Corn Millers to Meet Nov. 11-12 in Chicago

CHICAGO—Progress in the fields of sanitation, sales, government relations and "cooperative action for the good of the industry" will be reviewed by the American Corn Millers Federation at its convention here Nov. 11-12.

James W. Robinson, executive secretary, in announcing the program, said one of the highlights will be an address by Edward A. McFaul, whom Mr. Robinson terms "nationally prominent lecturer," speaking on ideas for increasing sales and strengthening the industry.

Advance registration begins Nov. 11 at the LaSalle Hotel. A board of directors meeting and meeting of the corn meal committee will complete activities for the first day. The general meeting will be held Nov. 12. A cocktail party will follow the general meeting.

FEED PLANT DAMAGED

TAMPA, FLA. — A fire in a feed mixing building of Pillsbury Mills, Inc., feed division, Tampa, resulted in damages estimated at "thousands of dollars" recently. A smouldering fire in grain bins along the north side of two brick buildings burst into flames. The Tampa fire inspector said the cause of the fire has not been determined.

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Dun & Bradstreet Reports Business Failures 'In Line'

NEW YORK — Business failures, although rising in 1956 and through June, 1957, are not occurring at a faster pace than the upsurge in the total business population, reports Dun & Bradstreet, Inc.

During the first six months of 1957, 9,946 out of every 10,000 business concerns in the U.S. did not fail with losses to creditors, the company reports.

In a recent study, the company found that:

More than half of the failures occur in businesses that have been in existence for five years or less. It is interesting to note that the proportion of "younger" failures has been declining steadily in the past 10 years with the exception of 1956 (from 77.6% in 1947 down to 56.6% in 1953 and up to 58.6% in 1956). However, the toll among businesses aged 10 years or more has increased almost steadily in the same period (from 9.1% in 1947 to 18.3% in 1956). This would indicate that experience may not necessarily come with age.

In size, failures are relatively small. Some 63% of the failures in the first six months of 1957 had liabilities of less than $25,000 and only .4% had losses ranging about $1 million. Further, average liabilities per casualty are currently below the post-war peaks established in 1946 and 1947.

Among retailers, the highest 1956 failure rate was 211 per 10,000 for infants' and children's wear stores. The next highest rate, 158 per 10,000, was for women's ready-to-wear stores. And men's wear stores suffered casualties of 127 for each 10,000 operating concerns in the line. The low rate was 20 per 10,000 for farm equipment retailers.

Dun & Bradstreet also computed the failure rate for certain manufacturing lines. In 1956, the highest failure rate per 10,000 operating manufacturing concerns was 232 for furniture manufacturers. Leather and shoe manufacturers and apparel manufacturers were runners-up with failure rates of 175 and 144, respectively. Stone, clay and glass manufacturers showed the lowest rate with 30 per 10,000 concerns.

By states, the highest failure rates per 10,000 operating concerns within each state were: Nevada, 141.8; California, 135, and New York, 106.5. The five states with the lowest failure rates were: South Dakota, 10.2; Arkansas, 11; North Dakota, 11.3; Indiana, 13, and Wyoming, 13.5.

For the first half of this year, Dun & Bradstreet reported 7,089 business failures with creditors' losses of $336,408,000. Percentagewise, this represented an increase of 9% in numbers and 20% in liabilities as compared to a similar period of 1956. This upward trend appears to have slackened from the rise occurring between 1955 and 1956 when 16% more concerns failed and their liabilities mounted 25%.

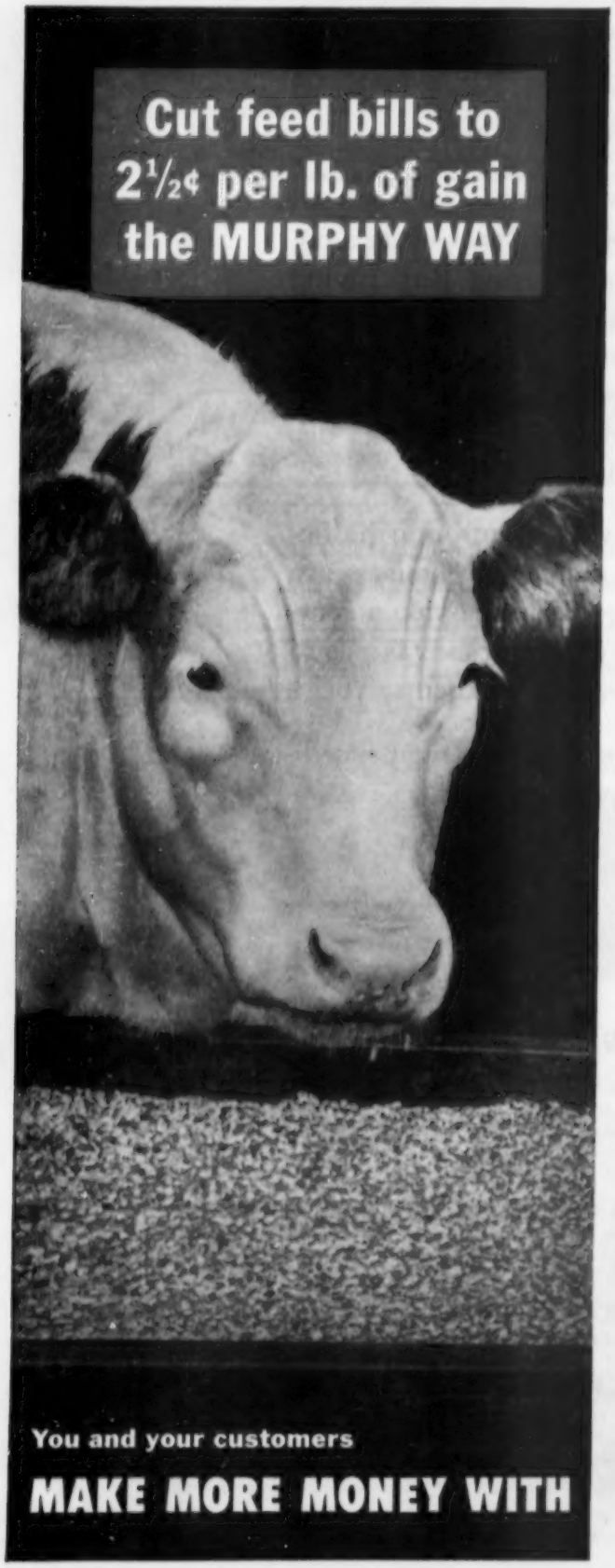
Failure statistics compiled by Dun & Bradstreet do not include all discontinuances of business. Reported figures include only those concerns which go out of business with a loss to creditors. These include concerns filing petitions in bankruptcy, those who assign for the benefit of creditors, and those who do not resort to any recorded form of settlement.

Dr. Marion A. Hammerlund

JOINS RALSTON STAFF—Dr. Marion A. Hammerlund, formerly a member of the Colorado State University staff, has joined the animal pathology division of the Ralston Purina Co., it has been announced by Dr. R. M. Bethke, research vice president. A native of Topeka, Kansas, Dr. Hammerlund received his degrees at Kansas State College. Following two years in large animal veterinary practice, he joined Colorado State University where he did diagnostic work and taught poultry diseases to veterinary students. Dr. Hammerlund also did graduate study in animal pathology.

FEED STORE OPENS

LODI, CAL.—The Farm & Garden Store was opened here recently as the first complete feed and farm supply specialty shop in this San Joaquin Valley community. R. G. Christianson, formerly a manufacturers' representative for U.S. Steel and other companies, is owner. He features products of the Hilco Feed Co. and other equipment for livestock and poultry raisers. The store, set back from the road to permit drive-in parking area, resembles a farmyard barn, painted red with white trim.



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Murphy's supplies only those nutrients homegrown feeds lack, but it supplies them in abundance. Murphy's combines with grain and roughage to produce gains up to 3 lbs. per day or more, at a purchased feed cost often as low as 2½¢ per pound of gain. That means more feeding profit per dollar invested . . . and your business *depends* on your customers' profit.

Write today for information on how you can serve your customers better with Murphy's Cut-Cost Concentrate.

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Use Feedstuffs WANT ADS for RESULTS

VIRGINIA SPEAKERS—Feed men attending the annual Virginia State Feed Assn. convention in Roanoke heard these four speakers. Left to right are L. A. Robbins, Lindsey-Robinson & Co., Roanoke; James V. Peavy, Cosby-Hodges Milling Co., Birmingham, Ala.; Richard D. Chumney, administrative assistant to the Virginia commissioner of agriculture, and Dr. L. A. Wilhelm, The Quaker Oats Co., Chicago.

Swine Experts Predict $13 Hogs in 1958

GRUNDY CENTER, IOWA—Leaders in the swine industry and those who watch its ups and downs closely predict that the hog price in the fall of 1958 will drop to a low of about $13.

Queried by the National Hog Farmer, a publication for the swine industry, college men, swine producers and representatives of banks, meat packing firms and marketing agencies gave their opinions. They were asked what will be the effect of the Secretary of Agriculture's recent action in supporting noncompliance corn and with it the effect of the large supplies of feed grains on farrowing plans.

Out of 15 replies, nine included estimates on the low hog price next fall. The range was $11 to $15, and the average was about $13.

The answers showed that there was no clear-cut opinion as to what effect the Secretary's announcement will have, however. While some guessed it will have no effect at all, others said they think it will mean 10 to 15% less hogs than could have been expected without the support for noncompliance corn.

There was general agreement, however, that some expansion is inevitable and that the expansion will drive prices down to a low of about $13.

A total of 30 questionnaires were sent. Ten went to college men, 10 to swine producers and 10 to the remaining groups.

KILLED IN AUTO CRASH

MT. STERLING, ILL.—Donald Lloyd Stinson, 25, assistant manager of the Teefey Feed Co. here, was burned to death in a car accident in Versailles Oct. 11. He was a passenger in a car which left the road, sheared off two telephone poles, smashed into a tree, overturned and burst into flames.

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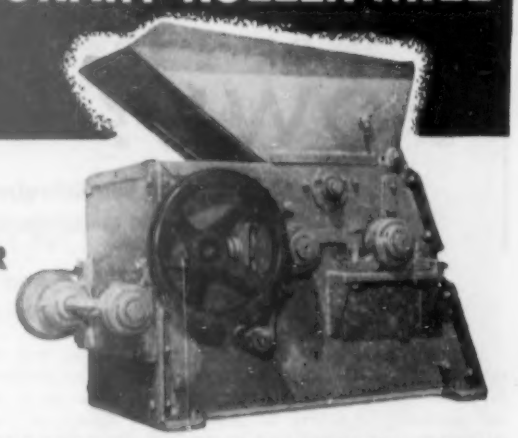

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1316 C Sherman Ave. Evanston, Ill.

UP OR DOWN?

By Leonard W. Schruben
Agricultural Economist, Kansas State College

Seasonal Variation in Price and Production of Meat Scraps and Tankage

Price isn't the only thing that goes up or down as the season progresses. Sometimes it is a good idea to examine seasonal variation of production of major feed ingredients as well as price.

In this connection it is interesting to review seasonal variation in production of important ingredients. Exhibit 1 shows seasonal variation of production for tankage, meat scraps and skim milk. An index is used so you can compare variations of each with the other two.

You will notice that the variation in the production of meat scraps and tankage is not very great from one season of the year to another. Also they tend to follow about the same pattern which is expected because both are products of the packing industry. However, you will notice that there is a very high and low peak in the production of dry or powdered skim milk following the pasture season and the spring increase in milk flow.

It is interesting to note in Exhibit 2 the relatively small fluctuation in seasonal prices of both tankage and meat scraps. While they tend to reach a low point at the same time of the year tankage tends to be relatively higher in the winter season, whereas the reverse is true during the summer.

The seasonal price fluctuation for fish meal, also shown in Exhibit 2, is almost the opposite of meat scraps.

In compounding feeds where substitution is possible, some savings may be realized by switching according to the season.

EXHIBIT 1. Seasonal variation in production of selected feed ingredients, U.S., 1944-54.

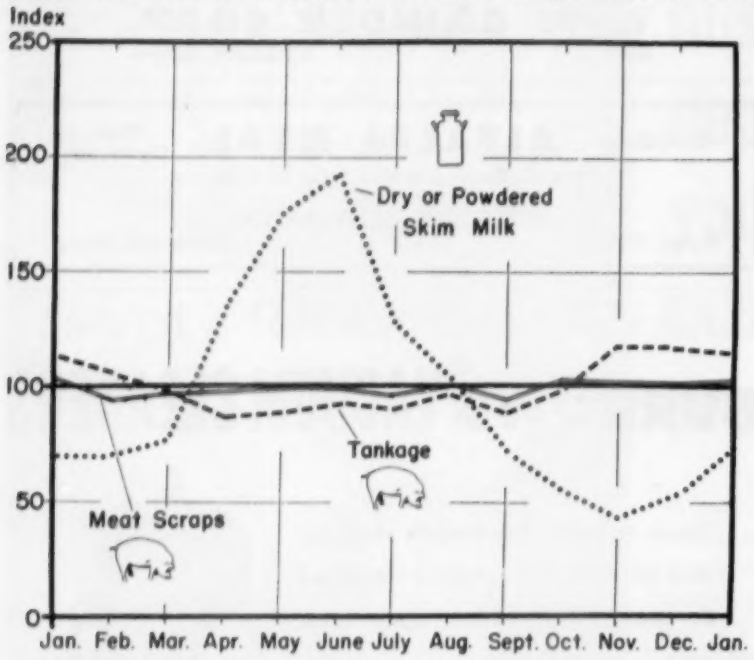
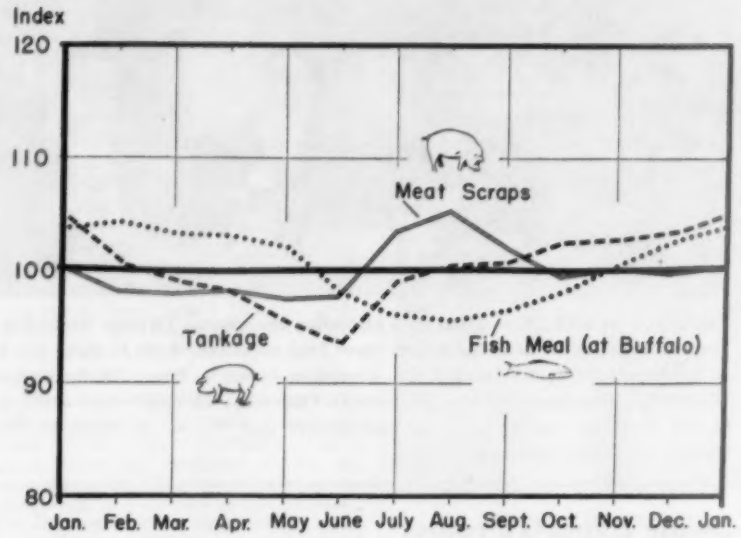


EXHIBIT 2. Seasonal variation in price of selected feed ingredients, Kansas City, 1938-55.



Pig Nutrition Needs Studied at Iowa State

AMES, IOWA—Study of the nutritional requirements of early weaned pigs involved 892 pigs for 14 experiments at the Iowa Agricultural Experiment Station in 1956, according to a report in Iowa Farm Science, experimental station publication.

Five of the experiments were aimed at developing methods to evaluate and estimate the vitamin A requirements of the baby pig. Another two experiments sought to gain more information on unidentified growth factors in the nutrition of baby pigs.

In four experiments conducted to study the protein requirements of the pig from one to five weeks of age, it was found that 12% protein was definitely too low. Baby pig gains increased as the protein levels were increased up to about 18 or 22%. Then gains started to decline. Of three sources of protein tested—dried skim milk, 50% solvent soybean oil meal and Drackett C-1 assay protein—dried skim milk was the best source of protein.

Also, two experiments were conducted to study the ability of the baby pig to utilize various carbohydrates in dry diets with two basic types of protein. In comparing 11 carbohydrate sources for baby pigs from one to five weeks of age and using a soybean oil meal diet, lactose gave the best performance. Sucrose produced the best results when a casein protein diet was used.

THE New WAY TO DELIVER BULK FEED!

Inset shows cutaway of rotary feeder. Feed is metered into base of feeder housing, from which it is blown by high velocity air into discharge tube.

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WRITE for Illustrated Bulletin A-414.

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Feed Service Bulletin Board

Helpful Notes on Feeding and Management for Feed Men and Their Customers

Cautions on Pullet-Buying

The farmer should watch his step when buying ready-to-lay pullets. Some producers, in an attempt to get into the business in a hurry while egg prices are high, are buying about anything with feathers, says Glyde A. Marsh, Ohio State University extension poultryman.

Only well-bred, healthy pullets will be profitable, he points out. Producers having difficulty in purchasing satisfactory ready-to-lay pullets should consider starting a flock of fall or winter chicks. These birds will be in production in five months and the hazard of buying older birds will be avoided.

When buying pullets, ask to see the original chick sales bill to be sure of the breeding. Broiler breeds will lay well for only a short period and will have poor feed efficiency. Look for heavy yellow pigmentation in the shanks and the skin, plus smooth, even feathering, indications of freedom from disease, Mr. Marsh points out. Remember, though, that pullets raised in confinement normally aren't as smoothly feathered or as highly colored as range-reared birds. Finally, don't buy birds from an unhealthy flock.

◆

Urges Multiple Farrowing

Multiple farrowing can give swine producers a good hedge against violent price fluctuations, says L. J. Kortan, livestock specialist at South Dakota State College.

Farrowing over a longer period means a producer can sell several times a year, and avoid having to market all his hog crop when prices are down. The specialist reports producers selling several times a year generally have received $4 to $5 cwt. more than the producers selling only once.

He suggested a multiple farrowing plan for farmers in states like South Dakota might include four farrowings a year with two sets of sows. If breeding is done in October, January, April and July, then pigs might be marketed in June, September, December and March.

◆

Farm Efficiency Soars

There's a good reason for the record crop of feed grains being harvested this year, according to recent report of farm production and efficiency by the U.S. Department of Agriculture. Efficiency in production of these feed grains has jumped 75% since 1947-49.

Production of all crops per man hour of labor increased 40% from that period through 1956. There's been a 28% improvement in hay and forage production methods; 46% for food grains; 19% for vegetable crops and 14% for fruits and nuts.

Much more progress has been made in crop production than in production of livestock and livestock products, however. In meat animal production, the output per man hour of labor in 1956 had increased 6% over 1947-49. In milk production it had increased 21% in the same period, and in poultry production, 40%.

This adds up to a faster increase in output per farm worker in the U.S. than in any similar period in history, according to the USDA report. In 1820, one farm worker supported 4.12 persons. This has doubled several times, until in 1956, each farm worker was producing food for himself and nearly 20 other persons.

◆

Shipping Fever Losses

"Stress fever" is a better term for the condition long known as shipping fever, according to beef specialists at Purdue University.

There's still no one sure cure or preventive for the disease, but the seven pointers developed at Purdue over a 10-year period have been effective in cutting losses to less than 1%, say W. M. Beeson and T. W. Perry. Out of 300 head of feeder steers and heifers, one heifer died and only four became sick enough to require treatment by a veterinarian.

Bovine shipping fever, as it is called, is essentially an infectious respiratory disease triggered by predisposing stress factors, they point out. It is usually caused by subjecting cattle to various stress factors such as excitement, fatigue, starvation, dehydration, drafty cars or trucks and overcrowding. Dust and other foreign matter irritate the lungs and eyes. Lack of water and feed upsets the normal processes of rumination and digestion. This combination leaves animals wide open to colds, flu and pneumonia.

Purdue lists these seven pointers: (1) Feed an antibiotic—either Aureo-

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mycin or Terramycin—for 21 to 28 days after the cattle arrive. Since cattle are reluctant to eat supplement when they first arrive, it is most effective to mix the antibiotic feed supplement either with ground corn cobs or chopped hay as a complete ration. For the first few days, calves will eat 7 to 8 lb. of complete feed a day. So mix 2 lb. supplement containing 250 mg. antibiotic per pound, with 5 to 6 lb. ground corn cobs or chopped hay.

(2) Unload cattle into a dry lot equipped with a shelter and dry bedding.

(3) Give the cattle a comfortable place to rest for three weeks or more without being disturbed. Don't dehorn, castrate, brand or otherwise do anything that would excite them during this period.

(4) Allow free access to clean water and a mineral mixture of two parts bonemeal and one part salt.

(5) Feed a poor quality roughage the first three weeks. The poorer the roughage, the less trouble with shipping fever. Use a grass hay like timothy, brome or prairie hay, ground corn cobs or a mixture of oat straw and hay. Don't feed high quality legumes such as alfalfa or clover at the start, or scouring and aggravated fever will result.

(6) Inspect the entire herd two or three times a day. Quietly remove sick animals before treating—those showing weakness, excessive secretion from the eyes and nose and heavy breathing should be isolated and treated by a veterinarian.

(7) After three weeks, move healthy cattle out on fall pasture or corn fields. Keep sick ones in dry lot until they're completely recovered.

VY LACTOS SALES MEETING—Executive and sales personnel of Vy Lactos Laboratories recently attended a special meeting at the firm's offices in Des Moines. Plans were presented for the six-week sales campaign celebrating the company's 28th anniversary. The campaign will feature dried molasses products. Left to right, front row, are Bill Rogerson, president; Gary Severson, director of sales and nutrition; Sam Fleming, assistant sales manager; Sam Sawdey, vice president; Gene Ludwig. Second row, left to right, are Bill Swails, Duane Morrow, Charles Everance, John Goeders, Lester Colton, Gene Coats, Dave Morrison, Wayne Lantis.

School for Poultry Servicemen Planned

NEW BRUNSWICK, N.J.—Poultry servicemen working in feeds and allied industries will be the students at a one-day school to be held Nov. 22 at Rutgers University.

Sponsored by the department of poultry science at Rutgers, the day of sessions will be held in Agora Hall. University men and industry representatives from New Jersey will be in charge of the sessions.

Subjects for the day include market quality in eggs, identification of New Jersey-produced eggs, variations in the physiological response of individual birds, developments in poultry nutrition, the place of non-nutritive supplements in practical poultry rations, poultry research and poultry farming of today and tomorrow.

Registration for the school is $2.

McKesson & Robbins Appoints Manager

DES MOINES—Luther P. Hyre has been appointed branch manager of the chemical division of McKesson & Robbins, Inc. He succeeds Fouts Dooley, who has been transferred to Cedar Rapids as branch manager. Mr. Hyre has been with the firm 12 years.

The branch of the drug firm deals in heavy chemicals for the feed and industrial trade.

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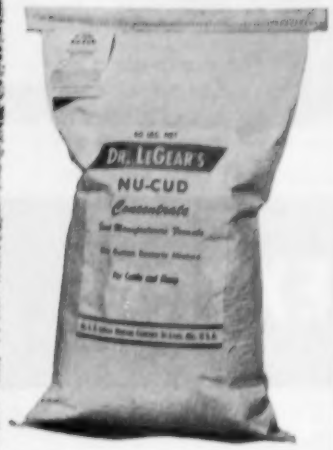

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Pfizer Names Winners Of $1,500 Fellowships

MINNEAPOLIS—Four home demonstration agents received $1,500 fellowships recently to enable them to obtain additional professional training through advanced study or educational travel.

The awards have been made annually by Chas. Pfizer & Co., Inc., for the past three years to agents—one from each of the four extension service regions in the U.S.—who have demonstrated unusual competence.

This year's winners are: Ruth E. Crawford, Eureka, Cal.; Iris Macumber, Dayton, Ohio; Mrs. Mary G. Stowell, Warwick, Va., and Mrs. Elizabeth W. Gassette, Hartford, Conn.

Formal presentation of the awards was made by J. Jerome Thompson, vice president of Pfizer in charge of the agricultural division, at the annual meeting of the National Home Demonstration Agents' Assn. in Minneapolis.

Scholarship Program

NEW YORK—Corn Products Refining Co. employees and their children are now eligible for four-year scholarships under a new program established by the Whitehall Foundation, Inc., James A. Moffett, president of the foundation, has announced.

To be known as the George M. Moffett Scholarships in honor of a past president of Corn Products, the scholarships will be applicable at any accredited college or university. All of the company's 18,000 employees and their children located in the U.S. and abroad are eligible.

Trend Toward Pig Feeding Specialization Continuing

There appears to be an industry-wide trend more and more away from the traditional type of swine operation where one man both produces pigs and feeds them to market weight.

A University of Maryland specialist recently called attention to this trend in connection with information on consignments to the Maryland Feeder Pig Sale.

Dr. James R. Ferguson, animal husbandman at the university, said the consignments to the sale are beginning to reflect the trend toward more specialized operations where one man produces pigs and somebody else feeds them.

Specialized "pig parlor" feeding units in the South have attracted particular attention, and it has been reported that there are more and more operators in other areas, too, who are specializing in just feeding hogs out for market, buying their feeder pigs.

Corn Belt Feeders

For example, it has been indicated that more farmers in the Corn Belt are now in just the growing and finishing phase of the hog business, buying feeder pigs for such operations. These operators are said to be like cattle feeders, buying and feeding feeder pigs on their corn when prospects for favorable returns are good.

In Maryland, Dr. Ferguson said that the first two feeder pig sales held last fall and this past spring in Baltimore, consignments were from farmers who did not especially have a feeder sale in mind when they bred the pigs.

Now, he said, some farmers in the state are producing pigs strictly for the feeder sale. Dr. Ferguson looks for a big increase in the number of farmers raising feeder pigs.

He said that up to this time, most

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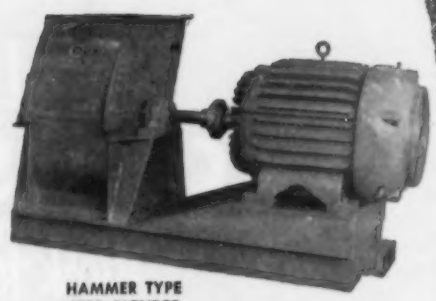
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of the pigs handled at the sales have gone into feeding operations that have been in existence for many years. These are the feeders who use waste products from bakery and food plants, and garbage. They represent a demand for thousands for feeder pigs every year, but a much larger potential demand for feeders is in sight.

Pig parlors are just beginning to appear in Maryland, Dr. Ferguson said. If such operations develop in Maryland as they have in some other areas, he said, one result will be an increase in the number of farmers who produce specifically for sale as feeders.

Dr. Ferguson said that in Georgia, for example, more than 800 pig parlor units are now a market for feeder pigs the year around.

Although some pigs will be grown on contract, Dr. Ferguson said, many feeders will depend on feeder pig sales where they can get pigs which have been inspected for health and sorted by grade and weight.

FIRE DESTROYS STORE

VACAVILLE, CAL. — The Globe Feed Store in Vacaville was destroyed by a fast spreading fire recently. Two trucks near the building were also burned. Customers and clerks in the store were evacuated without injury. William Bors, Globe's owner, estimated the damage at $35,000.

National Swine Council Plans Annual Meeting

DAVENPORT, IOWA — The National Swine Growers Council will hold its annual meeting here Nov. 13-14. All phases of the swine industry are to be discussed.

Talks are scheduled on financing, publicity, processing, grading, swine nutrition, management and breeding.

The annual meeting programs are expected to draw a large attendance of swine producers from eastern Iowa and western Illinois.

BEEF COUNCIL MOVES

DENVER — The National Beef Council will move its headquarters from Kansas City to Denver, A. Edwin Karlen, Columbia, S.D., council president, has announced. Mr. Karlen said the directors voted to move at a meeting in Denver recently. They also voted to concentrate on a long-range plan to promote the sale of beef. The American National Cattlemens Assn. agreed to provide the council with temporary office space in the association's quarters here.

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Findings of Costs, Volume in Country Elevators Reported

URBANA, ILL.—A recent study completed by the Farmer Cooperative Service, U.S. Department of Agriculture, in cooperation with the University of Illinois college of agriculture points out how costs of operating country grain elevators vary with different types of facilities and at different levels of volume in the Corn Belt.

R. J. Mutti, University of Illinois farm economist, and S. K. Thurston, USDA, sum up the findings this way:

At the base volumes assumed, the lowest costs per bushel were found with the larger size facilities—both in merchandising and in storage. The larger facility had a greater dollar and cent advantage per bushel over the small facility in storage than in merchandising operations.

When operating at one half the base volume assumed, the differences in unit costs between small and large facilities of the same type were greater than at full volume. The advantage of larger over the smaller plants increased. This relationship was true for both the storage operations and merchandise activities.

As volume increases, the proportion of total costs that are fixed costs declined and the proportion of variable costs increased.

At a given volume level, the facility whose highest share of capacity is used has the lowest costs per bushel. This advantage is greater for storage operations than for merchandising. Thus an ever present goal is to use facilities as near capacity as possible.

At the assumed amounts stored for three different types of facilities with similar capacity, the flat steel facility had lower costs than the concrete elevator. The concrete elevator had lower cost than the concrete tanks. In these comparisons it was assumed that a higher per cent of flat steel capacity would be used for storage than in the other types of facilities.

The flat steel facility had higher merchandising costs than the concrete tanks, and the tanks had higher costs than the concrete elevator when it was assumed that the concrete elevator would handle twice as much grain and the concrete tanks a third more grain than the flat facility.

At only half the base volume, the flat steel facility was at a slightly greater disadvantage in merchandising operation than at the assumed base. In storage operations at one half volume, the advantage of the flat steel over the concrete facilities narrowed.

At the same merchandising volume level for each facility, the flat steel had lower costs than the concrete tanks, which in turn had lower costs than the concrete elevator. With identical storage volumes, the concrete elevator had lower storage costs than the concrete tanks, and the tanks lower costs than the flat steel facility. This reversal of position was due in part to the way costs were allocated between storage and merchandising operations.

In making a decision as to what type of elevator facilities to build, Dr. Mutti points out that location is another factor to consider. If the area has uncertain future production, the risk of capital loss is reduced by erecting low cost facilities with alternative uses. Where prospects for growth in volume are favorable, the higher cost facility appears more likely to be the better investment.

Costs alone do not give a complete answer as to what type of facility to add, Dr. Mutti and Mr. Thurston conclude. Each operator has to study his own facilities, the types of expansion possible, and the activities of his competitors.

Complete details of this study may be obtained from the Farmer Cooperative Service, USDA, in Service Report 32, September, 1957.

H. E. Kennison

EASTERN MANAGER—Richardson Scale Co. has announced the creation of a new regional office in Clifton, N. J., to serve the eastern area and the appointment of H. E. Kennison as eastern regional manager. The office will have responsibility for the New England, New York, New Jersey and Philadelphia district offices, including export. Before assuming this new job, Mr. Kennison had been manager of the firm's New York office. The company said creation of the office is part of an over-all plan to provide its customers with experienced personnel to help advise about weighing, proportioning, blending or packaging of products, and in materials handling matters.

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Nutrient in mg./lb. feed	Level suggested for pig grower
Riboflavin	3
Niacin	20
Calcium Pantothenate	6
Choline Chloride	400
Vitamin B_{12} (mcg./lb.)	10

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(Continued from page 16)

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4. Disease conditions, including prevention practices (vaccination).
5. Parasitic infections, internal and external.
6. Endeavoring to push the animal beyond its genetic capabilities in the production of eggs, milk or meat.

The requirements for a number of nutrients are increased under conditions of stress, according to Mr. Atkinson, and a ration ordinarily adequate may become deficient when stress occurs. For example, a study made with rats indicates that their requirement for thiamine is 50% greater at 55° F. than at 78° F. Likewise in the growing pig, the riboflavin requirement is approximately 0.55 mg./lb. at 85° F., and 1.59 mg./lb. at 42° F.

Vitamin B_{12} is needed in greater amounts in some animals under stress, and vitamin A appears to be required in larger quantities under either extreme heat or cold. However, no one vitamin appears to be more important than any other during times of stress. This was illustrated by experiments with chicks artificially infected with fowl typhoid. High levels of all the vitamins, both fat-soluble and water-soluble, including vitamin C, were necessary before such chicks could be protected from the stress and mortality reduced.

Stress Control

Mr. Atkinson said that animals could best be protected against stress by providing the best environmental conditions possible and by following a sound sanitary and disease control program. To this should be added the feeding of the most completely balanced diet possible, with supplementation with additional nutrients during stress periods.

"It can be pointed out," the speaker continued, "that any type of stress causes changes in the metabolic patterns of the animal body. Most of these changes are due to the stimulation of the pituitary-adrenal system which operates to protect the animal and bring about an adaptation of the animal to the stress. Vitamin deficiencies, starvation, hormonal treatments, drugs, adverse environmental temperatures and many other stresses act as a triggering mechanism to set off the alarm reaction which is the first stage of the general adaptation syndrome.

"If the diet is adequate in all respects, there follows a stage of resistance to the stress which is the second stage of the general adaptation syndrome. This stage of resistance is formed and maintained by the high level of adrenal cortical hormones. High levels of all the vitamins are necessary for the maintenance of high levels of adrenal cortical hormone production. Under prolonged stress the adrenal gland depletes itself and is no longer able to maintain the high level of hormone production. When this occurs, the stage of exhaustion, which is the third phase of the general adaptation syndrome, sets in, and the animal succumbs."

Mr. Atkinson went on to say that "since all vitamins have been shown to be necessary for optimum pituitary-adrenal function, it is logical to assume that the requirements for most vitamins would be increased during times of stress." Experimentation has shown this to be true. Food intake has been shown to decrease

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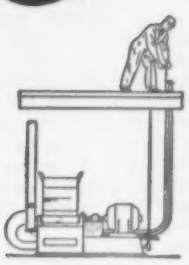

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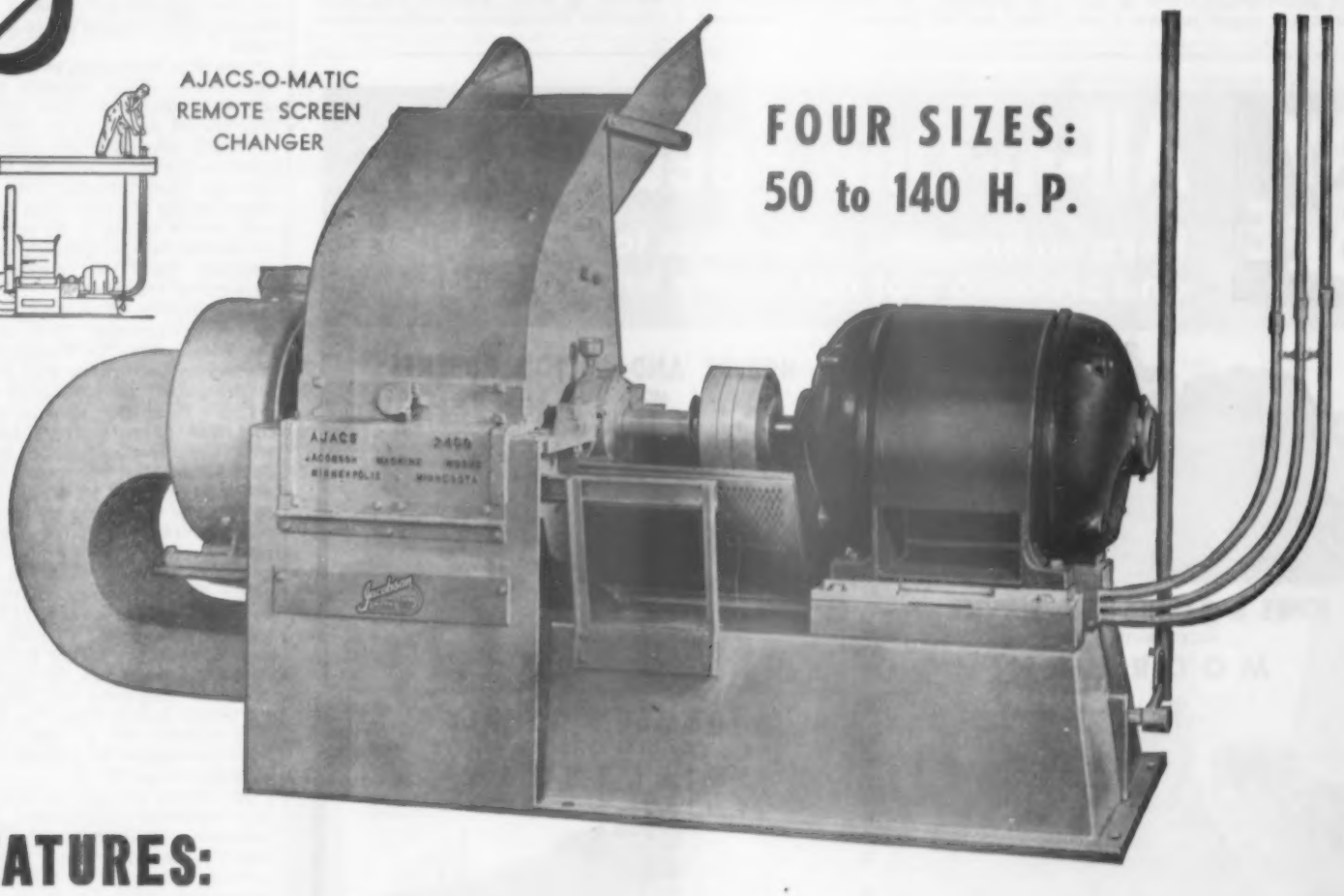

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during times of stress, probably because of decreased appetite caused by increased blood glucose. This causes a further deficiency of necessary nutrients, necessitating the feeding of a more concentrated feed during times of stress in order to insure adequate intake of all nutrients and particularly those operating for the maintenance of the pituitary-adrenal system.

"It seems to me," Mr. Atkinson went on, "that the recommendation of Kinsell might be appropriate during stress condition, regardless of the kind of animal involved whether it be man, mouse or chicken, and we therefore recommend a diet high in protein, adequate in calories, moderate in carbohydrate, adequate in ascorbic acid, fat-soluble and water-soluble vitamins, low in sodium and high in potassium.

"Since all of our farm animals, including poultry, are almost continually under one type of stress or another, perhaps it might be wise if we began to take a look at all of our recommended nutrient allowances to be sure that our levels are high enough in all nutrients to take care of at least the mild and moderate stresses that affect our animals with possibly increased levels of all nutrients to be recommended during times of extreme stress."

Environment Factors

Dr. W. O. Wilson of the University of California, in listing the effects of various environmental conditions on the health and productivity of livestock, indicated that laying hens kept in total darkness continue to produce eggs at a 20% level. This rate of lay is low, but it does point out that light is not essential to the extent formerly held. "As a matter of fact," Dr. Wilson said, "there is a strong indication that birds can receive too much light. If they are exposed to excessive hours, their subsequent egg production will be affected." He emphasized that he was not yet prepared to recommend less than a 14-hour day or a variation away from one foot candle intensity until further experimental work has been completed.

Among animals, long hours of daylight will induce the shedding of a long winter coat of hair, and conversely, short hours of daylight will promote the growth of the coat. This has been accomplished experimentally by reversing the amount of light given to the animal under carefully controlled lighting conditions. Apparently the association of hair coat and light protects the animal against long-term temperature changes. If the animal waited until it were cold to grow a long coat of hair, it might greatly tax its metabolism.

Reproduction is affected by light in certain mammals and in birds. Sheep and goats normally breed in the fall when days are short, and their young are born in the spring. Short days generally inhibit reproduction in birds, whereas long days stimulate reproduction within certain limits. In commercial poultry keeping, three factors are important in lighting: (1) total number of hours per day, (2) frequency of lighting, and (3) intensity.

Relative humidity and air movement are associated with heat loss and temperature. Humidity becomes important in chickens when the temperature is 85° or more. Man generally over-protects his animals and cuts down on air movement so that problems arise from wet litter, ammonia concentrations and spread of disease. Where ventilation is restricted, disease spread is much greater than with ample ventilation. However, windbreaks are important for cage laying houses.

Effect of Elevation

Dr. Wilson has found that elevation above 3,000 ft. will lower hatchability of turkey eggs. At 5,000 ft, chicken eggs will begin a decline in hatchability. Other workers have pointed out that animals will develop brisket disease when transported to high altitudes.

Growth is associated with temperature. Some young animals are unable to regulate their own body heat. This applies especially to baby chicks and baby pigs, and for this reason, brooders are often provided for these animals. Many growers over-protect their animals and give them too much heat, which seems to be worse than not having enough. Summer gains are generally lower than during the remainder of the year.

Reproduction of animals is altered by the environment. "For example," Dr. Wilson said, "in Washington, reproduction in turkeys was improved by preheating the toms prior to mating. In Kentucky it was observed that cool temperature is associated with the breeding season in sheep. Starting in May, one group of sheep was kept at 45-48° F., and a second at 88° F. The hot group showed higher body temperature and respiration rates. Average date of first estrus was nearly eight weeks earlier in the cool group. Treated rams bred to treated ewes required an average of 1.9 services per conception, whereas the animals kept in the higher temperature required 5.3 services. In chickens we find that Leghorns lay better than the heavy breeds when the temperature exceeds 90° F., and in cattle, milk production is reduced by temperatures over 80° F."

Dr. Wilson pointed out that at least five different experiment stations have shown that a fluctuating environment, or one that is not rigidly controlled, is as good as a constant environment. "It should be remembered," he concluded, "that a constant environment requires much elaborate equipment which can fail. When birds or animals are used to a constant environment, they are not adapted to sudden changes. Animals can withstand extremes of environment by the process of acclimatization."

Nutrition of Breeding Turkeys

Dr. Leo Jensen, Washington State College, appeared twice on the pro-

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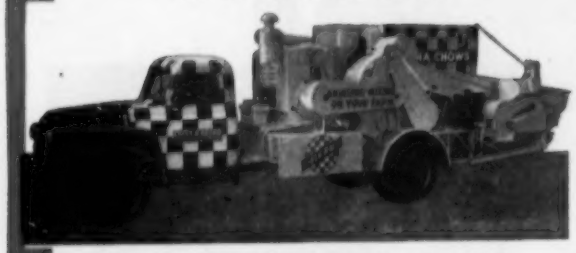

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gram. In his discussion on the nutrition of breeding turkeys, he began his presentation by saying that "if we were to experience 15-30% mortality in a flock of turkey poults during the first four weeks of life, we would be extremely concerned. Yet when we consider that the first four weeks of life for the turkey are inside the egg, we observe a consistent mortality of that degree."

"Over the last few years," Dr. Jensen continued, "we have seen many advances in the area of nutrition, breeding and management which have helped to greaatly reduce the mortality of turkey embryos and to increase fertility. Such management factors as pre-heating and proper handling of males, reduced storage holding time of eggs, use of artificial insemination, and pre-heating of turkey eggs, have helped in increasing the number of saleable poults from a given number of eggs. Certain strains of turkeys have been developed which are much better than other strains with respect to fertility and hatchability."

Vitamin E

Turning to the subject of nutrition, Dr. Jensen described a number of experiments conducted at Washington State on vitamin E in turkey breeder nutrition. In the first of the studies it was found that the addition of 2% fish liver oil to a practical all-mash ration reduced the hatchability of fertile eggs from 66% to approximately 39%. The addition of 20 I. units of vitamin E per pound of diet, with or without fish liver oil, resulted in hatch of between 77 and 80%, while 0.025% of an antioxidant (DPPD) improved hatchability in the presence of 2% fish liver oil, but did not quite bring it up to the level obtained with vitamin E. supplementation. Further trials indicated that the absolute requirement of turkey breeder hens for vitamin E is between 12 and 24 I. units per pound of feed.

On the question as to how long it takes to deplete the large store of vitamin E in a turkey hen kept on a practical breeder ration without vitamin E supplementation, Dr. Jensen found that on the average about 40 consecutive eggs were laid before a marked deficiency developed. Individual hens demonstrated a variation in hatchability, and some hens fed the non-supplemented ration maintained a high hatchibility level throughout the experiment. Vitamin E and BHT, alone and in combination, maintained hatchability as indicated in table 7.

"From these studies, then, what can we recommend as a vitamin E level for maximum hatchability in turkey breeder hens?" Dr. Jensen asked. He answered his question by stating: "I would say that a good over-all recommendation to assure a minimum level of vitamin E for maximum hatchability under most conditions is 10 International Units of vitamin E per pound and 4-8 oz. of BHT per ton."

Apparently, the need for unidentified factors is usually satisfied by the inclusion of common ingredients in the turkey breeder diet. Dr. Jensen reported on some Texas work which showed that an all-plant ration consisting largely of yellow corn, milo and soybean meal, is inadequate for the maintenance of maximum hatchability throughout the breeding season, but when supplemented with dehydrated alfalfa meal, condensed fish solubles and dried brewers' yeast, produced satisfactory results. The combination of these three unidentified factor sources boosted hatchability to a greater extent than when they were used individually. At Washington State the turkey breeders are routinely fed a diet which includes 3% dried whey, 3% fish meal and 2½% dehydrated alfalfa meal. This ration, when adequately supplemented with vitamin E, maintains hatchability at a relatively high level.

Touching the subject of the pro-

(Turn to CALIFORNIA, page 98)

TABLE 7. Effect of Vitamin E and BHT on Hatchability in Turkeys

Supplement	Hatchability of fertile eggs 1st 10 weeks %	2nd 10 weeks %
None	80	49
Vitamin E (5 I.U. per lb.)	80	61
BHT (0.0125%)	74	57
Vitamin + BHT	83	72
Vitamin E (30 I.U. per lb.)	80	59

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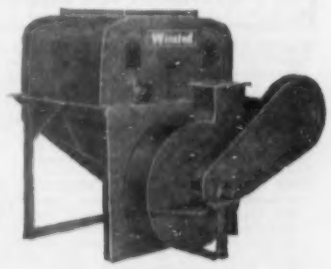

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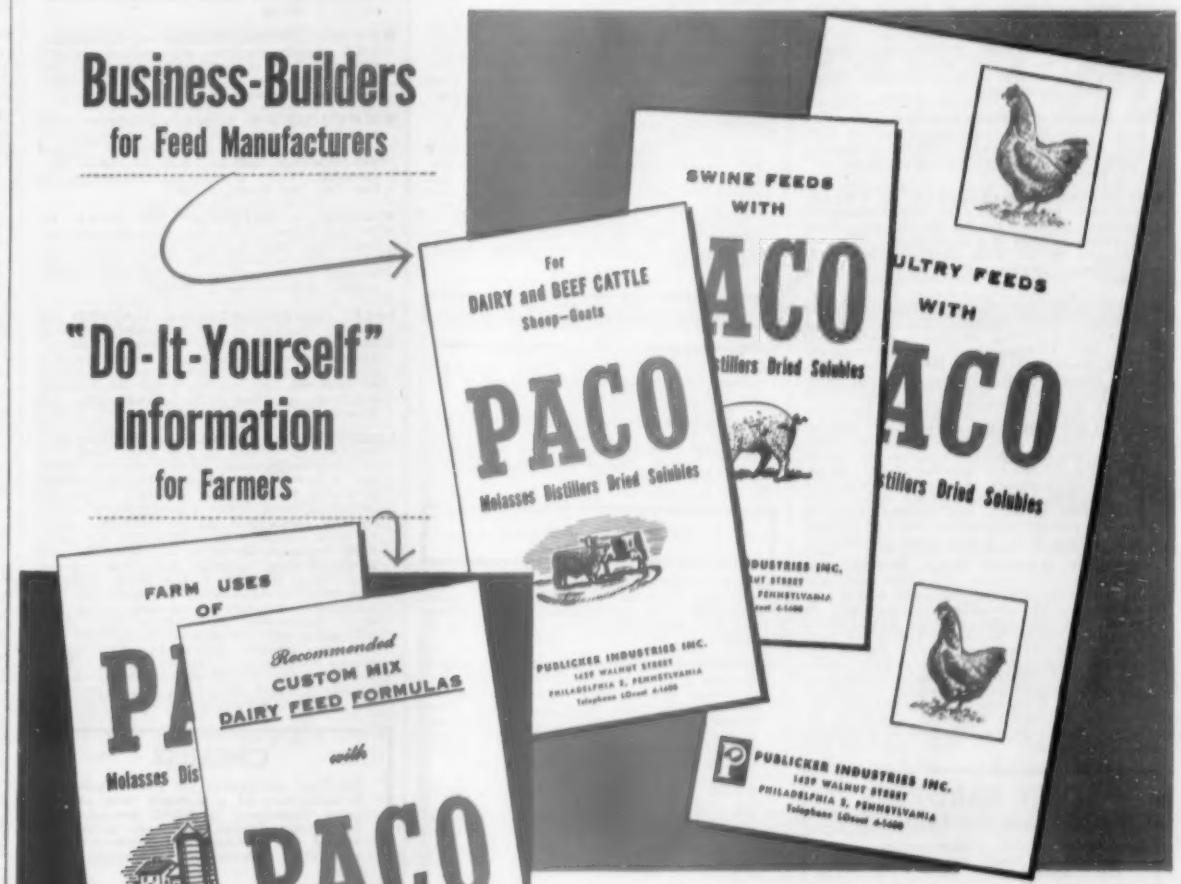

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1—3 Pr. High 9x18 88 Meal Roll.....	400.00	1—Model 439-3 Expand-O-Veyor, 25'—new	1,000.00

CALIFORNIA

(Continued from page 97)

tein requirement of turkey breeder hens, Dr. Jensen reported that the University of Alberta fed two levels of protein (15% and 17%) with three levels of productive energy (800, 850 and 900 calories per pound), and that the results indicated that rate of production, fertility and hatchability were not affected by the energy or protein levels used. Likewise, egg production and fertility were not affected by protein levels of 16% and 18% fed along with productive energy levels of 800, 900 and 1,000 calories per pound in a study conducted at the Ohio Experiment Station. Hatchability of fertile eggs was 6% lower on the 16% 800 calories diet, but it was not evident that the difference was significant.

Two years ago the Washington Station fed 16.3% and 19.7% protein levels to turkey breeder hens and found no difference in egg production or hatchability of fertile eggs. In a more recent trial levels of 15%, 17½%, and 20% protein were fed, and again no difference in egg production was found. Hatchability of fertile eggs was slightly lower for the 15% diet. (See Table 8.)

Dr. Jensen believes that the amount of protein required per unit of feed will be affected by climatic differences. "Hens kept in colder climates or in open houses will probably require less protein on a percentage basis than birds kept in insulated houses or in warmer climates. From the evidence available, however, it would appear that 16% protein is adequate for turkey breeders under most conditions."

Protein Concentrates

H. C. Schaefer, Ralston-Purina Co., compared the various protein concentrates for their nutrient values and observed that soybean oil meal is an excellent source of amino acids for most types of livestock. He said that it must be correctly processed, however, because both overheating and under-cooking affect its biological value, especially for broilers, turkeys and swine. Mr. Schaefer added that it is not possible to give a specific set of conditions for operating a solvent processing plant to produce the most nutritious meal. Each plant appears to require a special combination of conditions and the only way this can be determined is by feeding tests with rapidly growing chickens.

Cottonseed meal contains certain pigments known as gossypol, which are toxic to poultry and swine and which produce discoloration of yolks in eggs held in storage. Some advance has been made in the development of a process for the removal of gossypol from the meal, and it has recently been reported that a gossypol-free strain of cotton has been developed. High levels of cottonseed meal in turkey rations cause white bands in the feathers of dark colored birds. It seems that the most economical use of this meal is in the rations of ruminants, Mr. Schaefer said.

Corn gluten meal made from yellow corn is a good source of methionine and of the pigment, xanthophyll, which produces the yellow coloring in the skin of chickens. As a source of the amino acids, lysine and tryptophane, Mr. Schaefer explained, "it rates rather poorly." (See Table 9.)

Referring to the history of feedstuffs, the speaker explained that meat scraps and tankage were important sources of protein before the expansion of soybean meal production. Of late, their nutritional value has become more variable than soy-

TABLE 8. Protein Level and Performance of Turkey Breeders

Protein level %	Egg production %	Hatch of fertile eggs %	Aver. gain in wt. grms.	Feed per doz. eggs lb.
15.0	54.8	71.9	522	11.6
17.5	56.2	77.8	570	10.7
20.0	53.9	76.7	508	12.4

TABLE 9. Approximate Composition of Protein Concentrates

	Protein %	Ash %	Lysine %	Tryptophane %	Methionine %
Soybean oil meal	44 & 50	6	2.9	.66	.9
Cottonseed meal	34	6	1.4	.47	.8
Corn gluten feed	23	8.5	.67	.1	.48
Corn gluten meal	44	1.8	.8	.3	1.22
Meat scrap	45-51	30-35	2.9	.77	.4
Fish meal	61 & 65	10-15	5.0	.78	2.0
Linseed meal	28 & 36	5	1.1	.5	.75
Peanut meal	48	5	1.3	.4	.57
Distillers grains	28	2.5	.8	.23	1.14
Brewers yeast			2.8	.54	.9
Brewers grain	25	3.5	1.3	.37	.6
Copra	20	6	.68	.21	.35
Dried skim milk	33	8	2.6	.46	1.00
Hydrolyzed poultry feathers	85	3.5	1.55	.57	.51

bean meal, and their use in rations somewhat limited. This is partly due to the increased efficiency of the meat packing industry which has reduced the quality of the components of meat scraps and tankage. Theoretically the meat scrap from the rendering of dead farm animals should have the best nutritional value because it contains more muscle meat. Mr. Schaefer indicated that the best place to use meat scrap and tankage is in hog finishing or fattening rations and in general poultry diets.

Fish meal is a nutritious and valuable ingredient for poultry and swine, but due to limited production, it is costly and should be used wisely. The quality of fish meal varies with processing and whether it has become scorched during drying or in the curing process after drying. The most effective use of fish meal is in poultry breeder and starter rations and in swine gestation and starter feeds.

The production of linseed meal is rather low, and it is used primarily in ruminant rations because the amount that can be fed to small-stomach animals is limited. It produces sticky droppings and destroys vitamin B_{12}. Hydrolyzed feathers and poultry meat scrap are two new ingredients which have recently become available to the feed trade. Their production is limited, and their processing is not fully understood. "It is entirely possible," Mr. Schaefer predicted, "that hydrolyzed feather meal, which is very high in protein, may find a useful place in high-protein broiler rations."

Use of Concentrates

The use and value of protein concentrates is important in the feeding of farm animals for economical production. How and when they are used depends on availability, cost, nutritive value and on any negative or plus values they may contribute.

According to Mr. Schaefer the best use of protein concentrates is as follows:

Soybean oil meal—Broilers, turkeys, general poultry, swine, dogs, cattle and sheep.

Cottonseed meal — Cattle and sheep; limited amounts in swine and poultry.

Gluten feed—Cattle.

Gluten meal—Broilers.

Meat scrap and tankage—Swine and general poultry.

Fish meal—Breeder and starting rations in both poultry and swine.

Linseed meal—Cattle and sheep.

Peanut meal—General poultry and swine.

Distillers dried grains—Cattle.

Brewers dried grains—Cattle.

Copra—Dairy.

Dried milk products—Milk replacers, baby pig starter and pet foods.

Feather meal—Broiler finishers.

Poultry meat scrap—Broiler finishers.

Steer Feeding

According to Dr. T. B. Keith of the University of Idaho, the total digestible nutrient (TDN) value of a steer fattening ration varies with the ratio of concentrate to roughage. Approximately 5 lb. TDN are required for a gain of 1 lb. for a 500-600-lb. steer. A steer gaining 2 lb. per day would require about 10 lb. per day.

The average daily feed intake ranges from 15-18 lb. A ratio of concentrate to alfalfa hay of 1:1 will give the required TDN needed to produce storage gains. Higher intakes of concentrate will require smaller quantities of feed per unit of gain, but the feeder should recognize that the relative costs of the concentrate mixtures and roughage should determine the ratio fed.

Dr. Keith said that "the addition of 10% soybean oil meal to rations containing ½ to ⅔ of the dry matter replaced by corn silage will increase the rate and economy of gains in steers. When alfalfa hay is used as the sole roughage, the addition of soybean oil meal to the concentrate mixture does not necessarily increase the gains."

Feed Grain Composition

"Variability in the composition of cereal grains," Dr. C. W. Schaller of the University of California said, "is of concern to all who use them, whether it be for feed or manufactured products. While this variability is widely recognized, all the factors causing the variation are not known."

Dr. Schaller showed that a range in protein of barley from 7 to 16% is not uncommon by indicating the protein content of 120 commercial samples of one variety of barley produced within a small area in California during 1953. (See Table 10.)

Apparently climate affects the nitrogen composition of grains because protein tends to be high in hot, dry climates and low in moist, cool climates. When moisture is limited, plants make less vegetable growth and use less of the available nitrogen in producing foliage. Hence nitrogen is distributed in fewer bushels and the protein content of the grain is higher.

"Soil fertility likewise, appears to modify the protein content of grains," Dr. Schaller remarked. "In most cases it is not the total amount of nitrogen available, but its relationship to other growth factors. A given level might be excessive in one case but deficient in another."

TABLE 10

% Protein	% of samples at each level
8- 9	3
9-10	7
10-11	22
11-12	22
12-13	20
13-14	13
14-15	9
15-16	4

TABLE 11. Response of Barley to Various Rates of Nitrogen Applications

Nitrogen application lb./acre	Trial A Grain yield lb./acre	Trial A Protein %	Trial B Grain yield lb./acre	Trial B Protein %	Trial C Grain yield lb./acre	Trial C Protein %
0	1360	7.7	1500	12.0	2150	10.8
15	1490	7.7	1600	13.0	1870	11.5
30	1700	7.8	1600	13.7	1600	12.6
45	2100	7.9	1600	14.0	1490	12.8

Research Results

In trial A it is apparent the nitrogen level in the soil was the limiting factor. Applications of nitrogen increased yields but did not affect the protein level. This would continue with additional applications of nitrogen until some other factor becomes limited, which would then permit an accumulation of nitrogen.

The results of trial B indicate that some factor other than nitrogen was limiting. Yield levels remained constant, but protein increased, suggesting luxury consumption of nitrogen. The application of nitrogen in trial C stimulated excessive vegetative growth, resulting in the exhaustion of moisture or some other nutrient before maturity. The nitrogen available for protein synthesis was distributed in fewer kernels, resulting in higher protein.

It is also apparent that early applications of fertilizer may stimulate excessive vegetative production so that the bulk of the nitrogen is exhausted prior to heading, whereas applications of nitrogen at flowering have been effective in increasing protein level without affecting yield. This same picture prevails with irrigation, late applications of water causing increased protein content. Rotation of crops and varietal differences contribute to the variation appearing in the composition of cereal grains.

Dr. Schaller concluded by asking: "What does the future hold?" In answer, he said: "The trend has been toward greater variability and, I believe, will continue. The increased use of irrigation and fertilization, new crops permitting greater diversity of rotations, all contribute to greater variability. This trend will continue until we reach a stage when quality is of greater importance than total production. New technological developments, such as the use of tissue analysis as a guide in fertilization practices, will help to reverse this trend. In the meantime and perhaps for a long time, we will have to learn to live with this variability."

NEW MILL OPENS

LEIGHTON, IOWA — The grand opening for the new feed mill opened here recently by Brummel Bros. Co. has been held. Heading the firm are Earl and Melvin Brummel.

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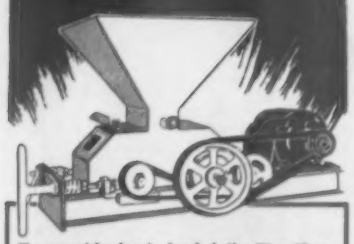

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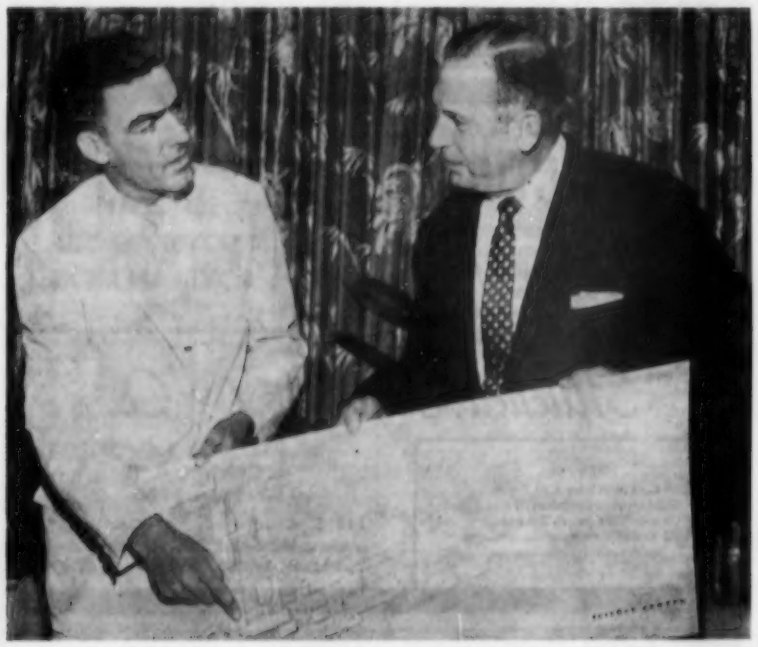
Leonard Hove & Lester Kirkegaard

HEAVY-FED AND HEALTHY—Cattle buyers in the Flandreau, S.D. area will look more favorably at the next lot of heavy-fed cattle marketed by Leonard Hove and Lester Kirkegaard. The last lot of 105 head fed out by the pair turned up "no abscessed livers in the entire bunch," the South Dakotans said. About 10% of cattle slaughtered nationally have abscessed livers, losses running from $3 to $5 per head. Kirkegaard and Hove credit the feeding of a new formula feed supplemented with Terramycin for the control of the liver abscess problem. "In fact," they said, "after trying this Terramycin feed on one lot of cattle, we put all our feeders on Terramycin."

Camera Views of the News ★ ★ ★ ★ ★ ★

AT TEXAS CONFERENCE—Discussions of nutrition topics were not limited to the lecture hall during the recent Texas Nutrition Conference at Texas A&M College. Engaged in these small conferences are, left to right, Harold J. Warthoe, Borden Co., Ft. Worth; W. J. Monson, Borden Co., Elgin, Ill.; H. T. Peeler, Universal Mills, Ft. Worth; Alvy R. Smith, El Rancho Mills Co., Clovis, N. M.; A. H. McDaniel, Texas A&M; V. W. Nielsen, Midwest Dried Milk Co., Dundee, Ill.; Jack Brennan, Abbott Laboratories, North Chicago; J. H. Bridges, Kern County Land Co., Bakersfield, Cal., and Don I. Gard, Eli Lilly & Co., Greenfield, Ind. The Texas conference covered a wide range of subjects dealing with recent developments in livestock and poultry feeding. Experts from industry, Texas A&M and other colleges appeared on the program. Discussions covered the broad fields of poultry, ruminant and swine nutrition.



GEORGIA SCIENCE CENTER — Poultry and livestock research will be spurred at the University of Georgia with the completion of the new $12 million science center now ready for construction. A special grant of $2,840,600 made by Gov. Marvin Griffin (right) assured completion. Shown here with Gov. Griffin is Dr. Henry Fuller, head of the poultry department. Also located in the center will be buildings to house physics, chemistry, food technology, biology, animal industry, methematics, geography and geology. Last summer Gov. Griffin allocated $5 million for the center, and the board of regents of the university have made available another $3,750,000.

DISCUSS FEED TECHNOLOGY COURSE—Faculty members of the milling industry department of Kansas State College and officers of the Kansas Formula Feed Manufacturers Assn. are pictured at a recent meeting in Abilene. The current situation in the feed technology courses was discussed, and feed manufacturers voted full support of the college program. They also pledged assistance in impressing state legislators with the need for funds. Standing, left to right, are R. O. Pence and E. P. Farrell, associate professors at Kansas State, and Jack Grubb, Naturich Mills, Abilene. Seated, left to right, are C. H. Blanke, Jr., Blair Milling & Elevator Corp., Atchison, secretary-treasurer of the state association; W. H. Hastings, associate professor of feed technology at Kansas State; Donald Geiser, Topeka (Kansas) Mill & Elevator Co., president of the state group, and John A. Johnson, professor of milling at Kansas State.

NEBRASKA FEED CONFERENCE — More than 150 persons attended the recent Nebraska Feed and Nutrition Conference at the University of Nebraska. Chatting informally (photos 1, 2 and 3), about current feed topics and looking over one of the exhibits, from left to right, are R. A. Pilster, Allied Mills, Inc., Omaha; Dr. O. Burr Ross, Gooch Feed Mills, Salina, Kansas, one of the conference speakers; Karl Nedela, Crete Mills, Crete, Neb.; Russell May, Quisenberry Mills, Inc., Kansas City; Ken Evans, Allied Chemical & Dye Corp. Nitrogen Division, Malvern, Iowa; Bruce L. Campbell, Deere & Co., Lincoln; Cliff Billings, Grain Belt Supply Co., Omaha; Leonard Cordes, Farmers Grain & Supply Co., Ulysses, Neb., and Dr. H. E. Hedlund, veterinarian from Wahoo, Neb.

CUNNINGHAM

(Continued from page 1)

a little lower than last year, probably averaging about $1.10 at the farm, or $1.20 at Chicago ($42.86 per ton).

Meal Price

Last year, he noted, the price of soybean meal, bulk, Decatur, averaged $47.33 per ton. This, it was pointed out, was about equal to the price of a ton of corn at Chicago.

In the year ahead, Dr. Cunningham said, meal prices are expected to average about $45 per ton. This would be above the expected price of corn at Chicago by 5%, but this differential would still be less than in recent years except for 1956-57.

Before making his corn and soybean meal price forecasts, Dr. Cunningham outlined prospects for livestock and poultry production and the feed supply picture.

He cited some of the figures in the report (Feedstuffs, Nov. 2) by the American Feed Manufacturers Assn. feed survey committee, of which he is a member.

He noted the prospects for more pigs and broilers in 1958 and fewer layers, with little or no change in number of turkeys raised. Dairymen will continue to get more milk from somewhat fewer cows, upping their grain feeding rate further in doing so.

Regarding beef cattle, Dr. Cunningham pointed out that the number on feed for market this fall is about 10% smaller than a year ago. Improved range conditions, he said, are likely to result in less protein feeding, even though more young cattle will be held there for replacement.

Big Supplies

Dr. Cunningham went on to point to bountiful feed supplies and said that producers will convert some 125 million tons of the feed into meat, milk and eggs.

He mentioned the huge corn supply for 1957-58 and noted that half a corn crop is in surplus, with the end-of-the-season stocks this year having reached nearly 1.4 billion bushels. He also called attention to the big grain sorghum production in 1957, with some 460 million bushels available for feed in 1957-58, compared with 179 million bushels actually fed last year.

Supplies of high-protein feeds for 1957-58, Dr. Cunningham said, are as large as the record amounts actually fed last year. Much depends on the size of the soybean crush.

Oilseed Meal

Last year, Dr. Cunningham continued, crushings of 316 million bushels of soybeans gave a production of 7.5 million tons of meal, of which about 7 million was fed in the U.S. This year, an anticipated crush of 330 million bushels would provide about 7.4 million tons for feed, with another 300,000 tons exported.

If anticipated crushings and exports of beans are realized, some 47 million bushels of beans will be left for carryover and residual at the end of the 1957-58 season.

Supplies of cottonseed meal and linseed meal available for feed in 1957-58 are smaller than last year, while changes in supplies of other high-protein feeds are expected to be small.

For 1957-58, the soybean meal equivalent of all high-protein by-products available for feed is calculated to be 14.08 million tons—practically the same as the amount fed last year.

(See accompanying table on high-protein feeds.)

Grains Plentiful

Noting the generally plentiful feed supplies, Dr. Cunningham said that grains especially are plentiful. Last year, about 97 million tons of the four major feed grains were fed. This year, 140 million tons are available for feed (after adjustment for exports, imports, non-feed uses and normal end-of-year stocks). Little change from last year is shown in supplies of low-protein by-products. Supplies of high-protein feeds continue large, but are not so plentiful as the grains.

The combined supplies of all concentrate feeds for the current feed year total about 166.3 million tons. The amount actually fed last year was about 122.8 million tons. The amount expected to be fed this year is around 125.3 million tons, thus the amount available for feed is 33% greater than the amount expected to be fed.

An accompanying table, from the AFMA feed survey committee report, provides a picture of the amounts of concentrates fed in 1956-57 and amounts available for feed in 1957-58 in the U.S.

(An earlier story on the Cornell Nutrition Conference appeared in the Nov. 2 issue of Feedstuffs, and reviews of technical papers will be found on page 22 of this issue.)

(J. A. McConnell of the Cornell industrial and labor relations staff, and formerly with the Cooperative G.L.F. Exchange and the U.S. Department of Agriculture, was scheduled to speak at the conference but was unable to be present because of illness.)

High-Protein By-Products Used for Feed U.S., 1956-57 and 1957-58

Item—	Conversion factor	Year beginning October, 1956-57* —thousand tons—	1957-58† —thousand tons—
Oilseed meals			
Soybean	1.00	7,041	7,370
Cottonseed	.89	2,311	2,140
Linseed	.80	507	360
Peanut	.93	52	50
Copra	.43	165	160
Animal by-products			
Tankage, meat scraps	1.20	1,125	1,150
Fish meal	1.35	425	400
Comm. milk products	.35	150	150
Other milk products‡	.76	1,100	1,100
Grain by-products			
Gluten feed & meal	.72	1,025	1,000
Dist. dried grains	.59	285	285
Brewers dried grains	.57	240	240
Urea	5.70	80	75
Other	1.41	80	100
Total (soybean meal equivalent)		14,047	14,080

Adapted from USDA Feed Situation.
*Preliminary. †Estimated. ‡Non-commercial.

Estimated Feed Supplies
Total Concentrates Fed to Livestock, 1956-57, and Available for Feed, 1957-58, U.S.

Concentrates	Year beginning October Fed to livestock —1956-57— mil. bu.	thous. tons	Available for feed* —1957-58— mil. bu.	thous. tons
Corn	2,468		3,576	
Oats	1,110		1,184	
Barley	212		349	
Gr. sorgh.	179		463	
TOTAL		96,964		140,412
Wheat and rye		2,000		2,000
Low-protein by-products		8,850		8,850
Alfalfa meal		1,200		1,200
Other		100		125
TOTAL		109,114		152,587
Adjustment for urea		400		375
TOTAL		108,714		152,212
Oilseed meals		10,076		10,080
Animal by-prod.		2,800		2,800
Grain by-prod.		1,550		1,525
Urea		80		75
Other		80		100
TOTAL (soybean meal equivalent)		14,047		14,080
TOTAL concentrates		122,761		166,292

Adapted from USDA Feed Situation.
*Allows for non-feed uses and assumes end-of-year stocks in millions of bushels: corn 300 and grain sorghums $0, Oct. 1, oats 250 and barley 75, July 1.

CLASSIFIED AD CORRECTION

A "Machinery for Sale" classified ad on page 98 of this issue of Feedstuffs—keyed "S233" and headed "Used Pellet Mills Priced for Quick Sale"—should have carried a price of $3,775.00, instead of the printed price of $2,775.00 for the second listing: "Sprout-Waldron Model 500 Junior with V-Belt drive, motor, stainless steel feeder conditioner." Feedstuffs was advised of this price correction after the classified ad page had been printed.

PIGS

(Continued from page 1)

These officials say that they made about the same prediction as now on hogs in 1955 but that they failed then to take into consideration the peaking of cattle marketing that year, which added to the problems of marketing pork.

They contend that hog prices are not going to go through the convolutions that occurred in 1955-56.

Yet they do say that after midsummer of 1958, hog prices will be appreciably lower. They are thinking in terms of $13.75-$14.00 hogs at the low point, it is believed.

The editors go on to express an escape in their observations when they say: "The extent of reduction (in hog prices) will depend on how much the spring pig crop actually increases. Very large expansion would bring danger of severely depressed prices."

Conservative Optimism

However, there is some conservative optimism in the report. The USDA men say:

"Hogs from the summer crop of 1958 will be ready for marketing beginning in the late summer of that year. Marketings will be up about in line with the increase in the number of pigs saved. The sizably larger volume will result in lower prices.

"If the pig crop and subsequent marketings should be up 8 to 10%, price declines would be substantial, but probably not extreme.

"Such an increase in supplies of pork per person in the fall and winter of 1958-59 would be larger than at the same time of 1956-57 and 1957-58."

Previously, at the time of big hog production, some officials thought that grain feed supplies could be held in animals and that a stepped up consumer demand for pork would bail out the increased pork supplies. This condition did not occur, although it must be noted that in that testing ground year, cattle production was peaking, which may have influenced a decline in disposal of consumer income for pork.

Another unassigned factor in the current picture is that of chicken and turkey in the disposal of consumer income.

Huge Feed Supplies

Judgments of USDA livestock officials are made prior to the final December report on the outturn of all grains and oilseeds. As of the last report from USDA, it is clear that there is much more feed grain on hand than can be consumed domestically or exported this crop year. In fact, with the harvest of the new crop plus the carryover, the supply of feed grains is a record-breaker.

There are no indications that any program the Secretary of Agriculture may present to Congress next year will slow down the build-up of more feed grains.

Technology is running ahead faster than farm politics.

Less Beef

Regarding the hog situation, what USDA livestock editors are conservatively reporting is a check on beef product availability. Yet they say at the same time that "demand for pork has lost ground to beef for a number of years." They add that any progressing of demand would help to maintain the prices of hogs during the production that appears to be ahead.

In summary, they conclude that "increased production and lower prices of hogs seem to be in prospect at least through 1959."

Meanwhile, as this reporter has repeatedly noted, the current USDA position in the grain and livestock picture is one of deep concern. Feed grain prices cannot help but slump under the impact of huge crops.

The large sorghum crop probably will include heavy amounts of wet grain which will have to go to market and cannot be stored.

USDA top officials this week declined to liberalize the grain sorghum loan to permit loans on grain of 14% moisture. The original program specified not more than 13% moisture in sorghums going under loan.

Feed prices are going to move into lower ground through the winter. Nothing USDA can do now in the face of the heavy supplies can halt such a decline.

USDA OUTLOOK

(Continued from page 1)

ply is expected to equal last year's record of 249 lb. for each animal unit.

Total feed concentrate supplies, which reached 200 million tons for the first time in 1956, are at a record 213 million tons for this year, with an increase of 6%.

U.S. consumption is expected to be a little heavier than in the 1956-57 feeding year and exports are expected to continue at the same level as the past two years. Even with this outlook for a bigger disappearance, however, an increase of about 10 million tons in carryover stocks into 1958-59 is in prospect.

Prices of feed grain are expected to average somewhat lower in 1957-58. In the first half of October prices were about 10% lower than a year earlier. They probably will continue lower through the winter and spring, and there probably will be less than the usual seasonal increase from this fall to next spring.

Prices of high protein feeds in early October were only slightly lower than a year ago, and they may average near last year's level for the 1957-58 feeding season.

TURKEYS

(Continued from page 1)

and over the Aug. 31 report for this year.

The report said many persons are holding large quantities of turkeys in storage, some unwillingly and some for speculation. There would be even more, the report said, "if it were not for the pressure of banks, feed companies and others who have financed growers and are now forcing the growers to sell to pay off the loans."

"While there is always the possibility of government purchases with Section 32 funds or other funds, it is generally concluded no purchases will be made this year," the report said. It is generally felt that purchases this late in the year would not be very helpful, particularly to growers. Since a large volume of turkeys has moved to market, the feeling is that the benefits of a purchase program at this time would reflect primarily to others than the growers.

Chicago Feed Club to Show 'Old MacDonald'

CHICAGO—The next meeting of the Chicago Feed Club will be held Nov. 15 at the Germania Club, 108 W. Germania Place. A social period will begin at 6 p.m. followed by a dinner of steak or lobster tail at 7.

Highlight of the entertainment will be the showing of "Old MacDonald," the new technicolor film produced under the auspices of the American Feed Manufacturers Assn.

Members are urged to bring along a "city feller" friend to view this illustration of the important role the feed industry and agriculture play in modern, scientific food production.

The film will be introduced by Richard Kathe, club member and director of agricultural services for the AFMA.

Reservations should be sent to Donald R. Rose, Allied Mills, Inc., 141 W. Jackson, Chicago 4, Ill.

THE FEED MARKETS

★ ★ ★ ★

Demand — Supply — Trends — Prices

Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

A AND D FEEDING OIL

Seattle: Demand slow; trend steady; supply good; 300 D, 2,250 A 22¢ lb.; 300 D, 1,500 A 19¢ lb.; 300 D, 750 A 17¢ lb.; all ex-warehouse, drums included.

Boston: Demand fair; supply adequate; 600 D, 1,500 A 16¢ lb.; 300 D, 2,250 A 17¢ lb.; 300 D, 1,500 A 15¢ lb.; 300 D, 750 A 14¢ lb.

Minneapolis: 10,000 A 35¢ lb.; 300 D, 2,250 A 21½¢ lb.; 300 D, 1,500 A 20½¢ lb.; 300 D, 75 A 18½¢.

Chicago: Demand fair; supply adequate; straight A feeding oil, with 10,000 units vitamin A per gram 9@10¢ a million units of vitamin A, l.c.l., packed in 55 gal. drums, f.o.b. Chicago, drums included.

New York: Trend steady; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 13⅛@15½¢, 1,500 A 15½@17¢, 2,250 A 17⅛@20¢, 3,000 A 19½@21¢; 600 ICU, 1,500 A 16@18¢, 2,250 A 18@19½¢, 3,000 A 20@21½¢; f.o.b. Massachusetts, New York or Pennsylvania.

ALFALFA MEAL

Seattle: Demand slow; trend steady; supply good; 15% protein suncured $43, delivered, carlots; 136,000 A unit dehydrated $67, delivered, carlots.

Omaha: Demand fair; supply ample; 17% dehydrated, 100,000 A, burlap or papers $52, bulk $49; 20% dehydrated, 150,000 A, bulk $55.

New Orleans: Demand poor; trend steady; supply adequate; dehydrated, 17% protein, vitamin A guaranteed $59@62; pellets $55@57.

Memphis: Demand poor; trend steady; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $54.

Boston: Demand fair; supply adequate; dehydrated, 17% $65; suncured, 13% $45.50.

Los Angeles: Dehydrated, 17% protein, 100,000 A $50@51, slow demand, steady trend, ample supplies; suncured, 15% protein $45, steady demand, weaker trend, ample supplies.

Buffalo: Demand fair; trend steady; supply adequate; $66, sacked, Boston.

Chicago: Demand slow; supply weaker; 17% dehydrated, with 100,000 units vitamin A guaranteed $57.50; 17% with no A guaranteed $54; 13% suncured $50.

Minneapolis: Prices remained steady; supply good and demand slow; 17% dehydrated, 100,000 units of vitamin A guaranteed $55@57; pellets, bulk $51@54; granules and oil treated, bulk, Minneapolis $56@58.

Kansas City: Demand slow to fair; higher prices indicated, but not immediately adequate, although most is now coming out of storage; a few spots producing in a limited way but meal is low in vitamin A; dehydrated alfalfa meal with 17% protein and 100,000 units vitamin A guaranteed on arrival $50@52, sacked, with blenders at the higher price; 18% protein, 125,000 units A meal $57, sacked; 17% protein, 100,000 A pellets $46@48, bulk; non-guaranteed A meal $45, sacked, in limited quantities; suncured meal is in poor demand and supplies are adequate with prices tending to be weaker; No. 1 fine ground $36.50@38; No. 1 ¼-in. $34@36; No. 2 ¼-in. $32@34, sacked.

Philadelphia: Demand slow; supply light; 17% dehydrated $65.50.

Cincinnati: Demand poor; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $67; 13% fine suncured $48@48.50.

Ft. Worth: Demand light; supply adequate; Kansas dehydrated, 17%, 100,000 A $58.75@61.75 by rail, $64 by truck; suncured No. 1 13% protein, ¼-in. grind, truck $40, November; Nebraska origin truck $41, rail $42.80@43.50, November through December.

Portland: Demand slow; supply ample; trend unchanged; 15% suncured $39, dehydrated $53, f.o.b. California.

ANIMAL FATS (STABILIZED)

Ft. Worth: Demand good; supply scarce; prime tallow, tank cars 8⅝¢ lb.; drums 10¼¢ lb., f.o.b. north Texas packing plants with returnable drums.

New Orleans: Demand fair to good; trend steady; supply light; 8¼@8⅝¢ lb., carlots, f.o.b. producers' plants; customers' drums 10@10¼c lb.

St. Paul: Strong undertone to market; supplies limited; 8¼¢ asked but 8¼¢ lb. was the prevalent going price for bleachable fancy, f.o.b. producers' plants.

Chicago: Demand fair; supply short; bleachable fancy tallow, tank truck or carlots 8⅝¢ lb.; yellow grease 7⅝¢ lb.

Louisville: Demand good; trend stronger; supply fair; bleachable white 8⅝¢ lb.; white tallow 8¢ lb.; yellow grease 7⅝¢ lb.

San Francisco: Demand fair; supply ample; bleachable fancy 8⅝¢ lb.; yellow grease 8¢ lb.

Kansas City: Demand a shade lower; trend steady; supply adequate in most cases; bleachable fancy tallow 8¼@8⅝¢ lb.

BARLEY FEED

Seattle: Demand fair; trend firmer; supply good; whole $55, ground $55, rolled $57, all ex-warehouse, l.c.l., sacked.

Milwaukee: Demand good; supply fair; needles $56@$1.06; ground $26.

San Francisco: Demand fair; supply ample; rolled $56, ground $55.

Boston: Demand slow; supply light; $46.

Los Angeles: Demand and trend steady; supply ample; standard rolled $2.99 cwt., sacked; standard ground $2.99 cwt., sacked.

Baltimore: Demand dull; supply light; $46.40.

New Orleans: Demand fair; trend firmer; supply adequate; ground barley $64@65.

Chicago: Demand dull; supply light; $36.

Portland: Demand good; supply ample; trend unchanged; rolled $58, ground $59.

Philadelphia: Demand slow; supply fair; pulverized $45.

Ogden: Supply normal; rolled $41@45; whole $37@41.

BENTONITE (SODIUM)

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30-ton carlots: 80 granular $30.21; 200 mesh fine $29.96.

Chicago: Demand steady; supply adequate; f.o.b. Wyoming and South Dakota shipping points: granular, 30 mesh $16.50; fine granular, 80 to 100 mesh $13.75; powder, 200 mesh $13.50; f.o.b. Belle Fourche, S.D., minimum 30-ton carlot: 80 granular $13.50 net; 200 mesh fine $13.25 net.

BLOOD FLOUR

Louisville: Demand fair; trend steady; supply ample; $95@100.

BLOOD MEAL

Louisville: Demand fair; trend steady; supply normal; $95@100.

Cincinnati: Demand fair; trend steady; supply adequate; $121@125.

Ogden: Supply normal; $100 in 100-lb. bags, f.o.b. Ogden.

New Orleans: Demand fair; trend steady; supply ample; $100@102.50.

Los Angeles: Demand fair; trend steady; supply adequate; $5.75 a unit of ammonia.

Chicago: Demand fair; supply ample; $110@120, guaranteed 80% protein.

Portland: Demand slow; supply ample; trend unchanged; $98.

San Francisco: Demand good; supply tight; $6.25 a unit of ammonia.

BONE MEAL (STEAMED)

Seattle: Demand and trend steady; supply good; $88.50, ex-dock, truck lots.

San Francisco: Demand good; supply ample; $75.

Cincinnati: Demand fair; trend steady; supply adequate; $80, sacked, f.o.b. Cincinnati

Boston: Demand and supply steady; $87.

Los Angeles: Demand fair; trend unchanged; supply adequate; imported $67.

Buffalo: Demand good; trend stronger; supply limited; $87.50, sacked.

New Orleans: Demand fair; trend steady; supply ample; $85@87.

Chicago: Demand and supply fair; $67.50@85.

Louisville: Demand slow; trend steady; supply ample; $75@80.

Ft. Worth: Demand quiet; supply adequate; $85, sacked, f.o.b. Ft. Worth, local manufacture.

Portland: Demand slow; supply ample; trend unchanged; $95.

BREWERS DRIED GRAINS

Philadelphia: Demand slow; supply light; $60.

Louisville: Demand fair; trend steady; supply ample; $50.

Cincinnati: Demand fair; trend steady; supply adequate; $54.

Los Angeles: Demand steady; trend unchanged; supply adequate; $49 bulk, $53 sacked.

Boston: Demand and supply fair; 26% $58@59.50; 22% $56.25@57.50.

New Orleans: Demand fair; trend steady; supply ample; $51@54.

Buffalo: Demand and supply fair; trend steady; $51, bulk, Boston.

Chicago: Demand and supply fair; 26% $47@49.

Ft. Worth: Demand slow; supply moderate; 26% $57.85, delivered, Ft. Worth, November.

Milwaukee: Demand good; supply fair; $49, Milwaukee.

San Francisco: Demand fair; supply ample; $54.

BREWERS DRIED YEAST

Seattle: Demand slow; trend steady; supply ample; $12 cwt.

San Francisco: Demand fair; supply good; 10¢ lb.

Los Angeles: Demand steady; trend unchanged; supply adequate; 9½¢ lb. in 5-ton lots; 11¢ lb. in less than 5-ton lots.

Chicago: Demand good; supply limited; 10@11½¢ lb. in carlots; 10¼@12½¢, l.c.l.

Buffalo: Demand good; trend steady; supply limited; $10.50 cwt.

Boston: Demand and supply steady; 11¢ lb.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

St. Louis: Demand fair; supply adequate; 10¢ lb. in carlots; 10½¢ lb. in 5-ton lots; 11¢ lb. in ton lots; 11½@12¢ lb. in less than ton lots.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New York: Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

Milwaukee: Demand good; supply limited; 10½@11½¢ lb. in carlots; 10½@12½¢ lb., l.c.l.

Omaha: Demand and supply good; 9½¢ lb.

Louisville: Demand reasonable; trend steady; supply ample; 10@10½¢ lb.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

BUTTERMILK-CONDENSED

San Francisco: Demand fair; supply good; $5 cwt.

Philadelphia: Demand dull; supply fair; $4.25 cwt.

Ogden: Supply average; $4.95, 100-lb. drum.

New Orleans: Demand slow to fair; trend steady; supply adequate; $4.75@4.95 in 500-lb. lots.

Boston: Demand slow; supply light; 3½¢ lb.

Chicago: Demand slow; supply adequate; $3.25@3.50 cwt. in carlots.

Los Angeles: Demand slow; trend unchanged; supply adequate; 5½¢ lb. in 100-lb. lots; 4¾¢ lb. in 500-lb. lots.

CALCITE CRYSTALS AND FLOUR

(All prices net, including freight and tax)

New York: Crystals $15.30, flour $10.30.
Buffalo: Crystals $16.16, flour $11.16.
Toledo: Crystals $15.06, flour $13.06.
Boston: Crystals $16.69, flour $11.69.
Limecrest, N. J.: Crystals $10.50, flour $5.50.

CALCIUM CARBONATE

Cincinnati: Demand fair; trend steady; supply adequate; $8@9.

Minneapolis: Plain $11; iodized (⅛ lb. KI per ton) $14.45; iodized manganesed $15.90, in 100-lb. bags.

Chicago: Plain $8.90 ton in 100-lb. bags, delivered.

Los Angeles: Demand and trend steady; supply ample; $10.25.

Seattle: Demand and trend steady; supply good; $14, ex-warehouse, truck lots.

CHARCOAL

San Francisco: Demand steady; supply ample; $135.

Los Angeles: Demand slow; trend unchanged; supply ample; hardwood poultry $156, less than ton lots; $144.40, ton lots.

Boston: Demand and supply light; $95, nominal.

Chicago: Demand quiet; supply adequate; poultry charcoal $102 in 50-lb. multiwalls.

Cincinnati: Demand good; trend steady; supply adequate; briquets $120, 25-lb. bags, f.o.b. warehouse, Cincinnati.

COCONUT MEAL

Portland: Demand slow; supply ample; trend unchanged; $62.

Los Angeles: Demand slow; trend weaker; supply ample; copra cake $55@57.

Seattle: Demand and trend steady; supply ample; $69, delivered, truck lots.

San Francisco: Demand fair; supply ample; solvent $55; expeller $57.

COD LIVER OIL (FORTIFIED)

New York: Trend steady; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 14⅝@15½¢, 1,500 A 16½@19¢, 2,250 A 18½@21¢, 3,000 A 21½@23¢; 600 ICU, 1,500 A 17⅛@19½¢, 2,250 A 20@22¢, 3,000 A 22@23¢; f.o.b. Massachusetts, New York and Pennsylvania.

Boston: Demand slow; supply ample; 600 D, 2,250 A 21¢ lb.; 300 D, 2,250 A 20¢ lb.; 300 D, 1,500 A 17½¢ lb.

CONDENSED FISH SOLUBLES

New York: Demand and supply fair; trend steady; 4⅞@5¢ lb., f.o.b. eastern shore.

Los Angeles: Demand better; trend unchanged; supply better; 5¢ lb.

New Orleans: Demand very good; trend firm; supply very light; 50% solids, menhaden $100, f.o.b. Gulf.

Boston: Demand good; supply scarce; 5¢ lb., nominal.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis, bulk basis $5 less)

Minneapolis: Feed $43.59, meal $73.59.
Atlanta: Feed $49.98, meal $79.98.
Birmingham: Feed $49.15, meal $79.15.
Boston: Feed $48.54, meal $78.54.
Chicago: Feed $37, meal $67.
Cleveland: Feed $43.93, meal $74.93.
Denver: Feed $47.20, meal $77.20.
Ft. Worth: Feed $45.65, meal $75.65.
Indianapolis: Feed $42.15, meal $72.15.
Kansas City: Feed $37, meal $67.
Louisville: Feed $44, meal $74.
New Orleans: Feed $46.78, meal $76.78.
New York: Feed $48.12, meal $78.12.
Norfolk: Feed $47.40, meal $77.40.
Philadelphia: Feed $47.71, meal $77.71.
Pittsburgh: Feed $45.65, meal $75.65.
St. Louis: Feed $37, meal $67.

CORN OIL MEAL

Louisville: Demand slow; trend steady; supply normal; $48.98.

Cincinnati: Demand poor; trend steady; supply adequate; $49.

COTTONSEED OIL MEAL

Cincinnati: Demand poor; trend steady; supply adequate; solvent $58; old process $60.50.

Louisville: Demand fair; trend stronger; supply normal; old process $48.98; new process $60.15.

Ogden: Supply average; 41% $70@75.

Philadelphia: Demand slow; supply fair; $68.50.

Ft. Worth: Demand improved; offerings light on old process, sufficient on solvent; carlots, 41% old process $54.50@55, f.o.b. north and central Texas mills; solvent 41% low gossypol $54.50@55.50, delivered Ft. Worth; pellets $2 additional; cottonseed hulls $17.50, delivered Ft. Worth.

Wichita: Demand slow; supply sufficient; 41% old process $61.

Portland: Demand slow; trend lower; supply ample; $64.

Kansas City: Demand good in southern areas; trend steady; supply adequate though some solvent plants are running on soybeans now; old process meal $51@52.50 for November and $52 for December, sacked, Memphis; solvent meal $49@50.

Seattle: Demand fair; trend steady; supply good; $69, delivered, truck lots, 41% expeller process.

San Francisco: Demand good; supply ample; expeller $58.50; solvent $57.50.

Omaha: Demand fair; trend improving; supply good; 41% solvent $64.

Chicago: Demand slow; supply adequate; hydraulic $63.50; solvent $60.50.

Buffalo: Demand fair; trend steady to higher; supply adequate; $69.50, sacked, Boston.

New Orleans: Demand poor; trend steady; supply adequate; 41% old process $69@69.50.

Memphis: Demand good; trend steady; supply plentiful; prime 41% solvent, old process $51, sacked; new process, 41% solvent $49, sacked.

Boston: Demand fair; supply ample; $71.

Los Angeles: Demand slow; trend unchanged; supply ample; $57.

Atlanta: Demand fair; supply ample; 41% $60, sacked, immediate.

CURACAO PHOSPHATE

New York: Trend steady; ground Curacao phosphate in 100-lb. bags $48, f.o.b. cars or trucks, New Orleans, Jacksonville, Fla., or Philadelphia.

D ACTIVATED ANIMAL STEROL, POWDERED

Kansas City: Demand normal; trend steady; supply adequate; 10⅛@11¢ lb.

New York: Trend steady; price per lb. in 50- and 100-lb. bags or 100-lb. drums: 1,500 ICU 8@12¢ bagged, 12@13¢ drums; 3,000 ICU 13@17¢ bagged, 17@18¢ drums; f.o.b. or delivered basis Pennsylvania, Delaware or New York.

Cincinnati: Demand slow; trend steady; supply ample; 1,500 ICU 11@12¢; 3,000 ICU 18¢, warehouse.

D ACTIVATED PLANT STEROL, POWDERED

Chicago: Demand good; supply adequate; 4,000,000 U.S.P. units per lb., 15¢ lb., ton lots and less 17¢; 12,000,000 units per lb., 5 tons to a carload 28¢ lb.; ton lots and less 20¢ lb.

DEFLUORINATED PHOSPHATE

Coronet, Fla.: Minimum phosphorus 17%, minimum calcium 34%, maximum fluorine .17% $58 net ton, f.o.b. Coronet in 100-lb. multiwall bags, $55 in bulk.

Tupelo, Miss.: Minimum phosphorus 13%, minimum calcium 31%, maximum fluorine .12%, $51 net ton, f.o.b. Tupelo in 100-lb. multiwall bags, $48 in bulk.

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $69.50 net ton, f.o.b. Houston, 100-lb. multiwall bags; $66.50 in bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum calcium 36%, maximum fluorine .18% $67.10 net ton, f.o.b. Wales, in 100-lb. multiwall bags, $64.10 in bulk.

Boston: Demand fair; supply light; $85, f.o.b. eastern shipping points.

Cincinnati: 18% phosphorus $78.98; 13% phosphorus $64.98, sacked, f.o.b. Cincinnati.

DICALCIUM PHOSPHATE

Texas City, Texas: 19% minimum phosphorus, 25% minimum calcium, 28% maximum, 0.11% maximum fluorine $76 net ton, f.o.b. Texas City in 100-lb. multiwall bags.

Trenton, Mich.: Minimum phosphorus 21%, maximum fluorine .01% guaranteed $90.30, f.o.b. Trenton, in 100-lb. multiwall bags; minimum phosphorus 18½%, maximum fluorine .01% guaranteed $79.55, f.o.b. Trenton in 100-lb. multiwall bags.

Columbia, Tenn.: Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $79.55 ton, f.o.b. Columbia, in 100-lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Chicago: Stock food grade, 18.5% phosphorus, 20,000 lb. or more $79.55 net ton in 100-lb. papers, basis Chicago Heights, Ill., or Nashville, Tenn., less than 20,000 lb. $89.55; 21% phosphorus, 20,000 lb. or more $90.30, basis Chicago Heights and Nashville, less than 20,000 lb. $100.30; bulk, boxcars or hoppers, $1 net ton less than bagged material.

Bonnie, Fla.: Minimum phosphorus 18½%, granular $79.55; freight equalized with closest producing point, carload basis.

Minneapolis: 18.5% phosphorus, 24% calcium granular or fine ground $90.25, delivered; $3 less in bulk.

Cincinnati: 18½% phosphorus $88@89.

DISTILLERS DRIED GRAINS

Philadelphia: Demand slow; supply very light; $59.50.

Cincinnati: Demand poor; trend steady; supply adequate; $54.

Boston: Demand active; supply tight; light $59.75, dark $61.75.

Buffalo: Demand and supply fair; trend steady; $55, bulk, Boston.

Louisville: Demand fair; trend steady; supply ample; for November, bourbon grains, light $50, dark $51, solubles $77.

Seattle: Demand dull; trend steady; supply ample; $63, delivered, truck lots.

San Francisco: Demand fair; supply ample; solubles $85.

DRIED BEET PULP

Milwaukee: Demand and supply good; plain and molasses, both $49.50.

Ft. Worth: Demand slow; supply sufficient; carlots, 50-lb. papers $58@59, November-December, delivered Ft. Worth.

Seattle: Demand slow; trend easy; supply good; $43, delivered, carlots, new crop.

San Francisco: Demand good; supply fair; $42.80.

Buffalo: Demand poor; trend steady; supply fair; $57.50, sacked, Boston.

Boston: Demand slow; supply ample; $57.

Los Angeles: Demand and trend steady; supply ample; molasses $46.50.

New Orleans: Demand fair; trend steady; supply ample; $52@58.

Atlanta: Demand slow; trend steady; supply ample; $64.25.

Ogden: Supply average; $43@48.

Cincinnati: Demand fair; trend steady; supply adequate; $55@56.

DRIED BUTTERMILK

Milwaukee: Demand and supply fair; $9 cwt.

Louisville: Demand fair; trend steady; supply normal; 10@11¢ lb.

Ft. Worth: Demand very slow; supply light; local production $10 cwt., f.o.b.

Wichita: Demand slow; supply sufficient; $8 cwt.

New Orleans: Demand fair; trend steady; supply adequate; $9@9.25 cwt.

Buffalo: Demand good; trend firmer; supply limited; $10.25 cwt.

Los Angeles: Demand better; supply ample; trend steady; 11¢ lb.

Chicago: Demand and supply fair; medium acid $9.25@9.50, sweet cream $9.50@9.75 cwt., in carlots.

Minneapolis: Prices unchanged; supply fair; demand slow; $9@9.50 cwt.

Ogden: Supply normal; $7.25, 100-lb. bag.

San Francisco: Demand fair; supply ample; 11¢ lb.

DRIED CITRUS MEAL

San Francisco: Demand good; supply fair; $52.

Los Angeles: Demand good; trend very steady; supply short; orange pulp $36 bulk, $41 sacked; lemon pulp $34 bulk, $39 sacked.

Boston: Demand poor; supply fair; $34, f.o.b. Florida.

New Orleans: Demand good; trend steady; supply limited; $49@52.

Buffalo: Demand fair; trend steady; supply poor; $36, sacked, f.o.b. Florida points.

Atlanta: Demand good; trend strong; supply limited; $49; meal $37.50.

DRIED SKIM MILK

Milwaukee: Demand and supply fair; $10.50 cwt.

San Francisco: Demand and supply fair; 13½¢ lb.

Minneapolis: Demand slow; prices unchanged at $10.50@11 cwt.

Los Angeles: Demand slow; trend unchanged; supply adequate; 14¢ lb., less than ton lots; 13¾¢ lb. in ton lots.

Buffalo: Demand good; trend steady; supply ample; spray $10.65 cwt.; roller $11.50 cwt.

New Orleans: Demand slow; trend steady; supply ample; $10.75@11.50 cwt.

Boston: Demand slow; supply fair; 12¢ lb.

Chicago: Demand slow; supply adequate; $10@10.25 cwt., in carlots.

Louisville: Demand fair; trend steady; supply normal; 11@12¢ lb.

Philadelphia: Demand dull; supply fair; $12.50 cwt.

Cincinnati: Demand fair; trend steady; supply adequate; 10¼@10¾¢ lb.

Ogden: Supply normal; $15.15, 100-lb. drum.

DRIED WHEY

Cincinnati: Demand fair; trend steady; supply adequate; $5.35 cwt., sweet $5.75 cwt.

Ft. Worth: Demand fair; supply adequate; carlots, standard $6.10 cwt., sacked, delivered Ft. Worth or any Texas point or in ton lots, f.o.b. warehouse Ft. Worth.

Philadelphia: Demand dull; supply fair; $6.25 cwt.

Louisville: Demand fair; trend steady; supply normal; 6¢ lb.

Ogden: Supply normal; $6.90, 100-lb. bag.

Seattle: Demand and trend steady; supply good; $6.25 cwt., ex-warehouse, l.c.l.

San Francisco: Demand steady; supply good; $5.50 cwt.

Kansas City: Demand normal; trend steady; supply adequate; $5.10 cwt., f.o.b. producing plant for both regular and partially delactosed.

Chicago: Demand slow; supply adequate; $5.20@5.30 cwt. in carlots.

Los Angeles: Demand slow; trend steady; supply adequate; $5.75 cwt. in carloads; $6 cwt. in l.c.l.

Boston: Demand steady; supply plentiful; $5.90 cwt.

New Orleans: Demand fair; trend steady; supply adequate; $5.75@6.10 cwt.

FEATHER MEAL (HYDROLYZED)

Boston: Demand fair; supply light; $85, f.o.b. eastern shipping points.

FISH MEAL

Seattle: Demand fair; trend firm; supply ample; $2.10 a unit protein, ex-dock (Alaska herring).

Milwaukee: Demand good; supply fair; 60% $15, f.o.b. Milwaukee.

San Francisco: Demand fair; supply ample; $2.07½ a unit of protein.

Ogden: Supply normal; $2.20 a unit, f.o.b. Coast; 65% $151@153.

Ft. Worth: Demand slow; offerings light on Canadian herring and menhaden, sufficient on imported at Houston; Canadian herring $2.05, nominal, a unit protein, f.o.b. Northwest Canada; 60% protein or better, menhaden, subject to catch $134, f.o.b. Port Arthur; imported 60% protein $135, f.o.b. Houston.

Los Angeles: Demand good; trend steady; supply light; $2.05 a unit of protein.

Boston: Demand and supply steady; 60% $133.

New Orleans: Demand good; trend firm; supply very light; menhaden, 60% $131@136; scrap $128@130, f.o.b. Gulf.

Buffalo: Demand good; trend steady; supply ample; 60% protein menhaden $142 bulk, $147 sacked.

Minneapolis: Demand slow; supply adequate; price trend lower; 70% Canadian herring $1.95 a unit of protein, West Coast; 60% meal $143, delivered, Minneapolis.

Chicago: Demand slow; supply ample; eastern menhaden fish meal, 60% protein $130@133; western blended, 60% protein $118@120; Gulf $130@133; Northwest herring-salmon blend $120; Canadian herring, 73% protein $1.95 a unit of protein; 60% blended $145, delivered Midwest points.

Louisville: Demand slow; trend steady; supply normal; $150.

Portland: Demand slow; trend lower; supply ample; $2 a unit of protein, f.o.b. Vancouver.

Cincinnati: Demand fair; trend steady; supply adequate; $150.

HAY

Seattle: Demand slow; trend firm; supply good; alfalfa, U.S. No. 2 green $26, delivered, truck lots.

Cincinnati: Demand poor; trend steady; supply adequate; No. 1 timothy $30.50; No. 1 red clover $22; No. 1 second cutting green alfalfa $24; No. 1 red clover mixed $24; wheat or oat straw $18.

Ogden: Supply normal; $1 bale; $15@17 in field or barn.

New Orleans: Demand improving; trend weaker; supply ample; No. 1 alfalfa $40@42; prairie $29@31; mixed clover and timothy $31.50@33.

Boston: Demand spotty; supply ample; No. 2 timothy $38@39.

Los Angeles: U.S. No. 1 $33@34, good demand, limited offerings; U.S. No. 2 leafy $30@32, good demand, limited offerings; U.S. No. 2 green $29.50@30.50, fair interest, adequate offerings; U.S. No. 2 $26@28, fair interest, adequate offerings.

Louisville: Demand slow; trend steady; supply good; No. 1 hay, any local variety $23@25; No. 2 $21@23; straw $18@20.

Philadelphia: Demand slow; supply fair; $29@30.

Ft. Worth: Demand fair for alfalfa, practically nil for prairie and Johnson grass; supply sufficient; carlots, baled, No. 1 alfalfa $40@42, No. 2 $38@40; prairie No. 2 $30@32; No. 2 Johnson $28@30, delivered Texas common points.

Wichita: Demand slow; supply ample; prairie $16@18; alfalfa $16@20.

HOMINY FEED

Cincinnati: Demand fair; trend steady to higher; supply adequate; $46.

Louisville: Demand fair; trend easy; supply normal; $44.20.

Milwaukee: Demand good; supply fair; $45, sacked, Milwaukee.

Boston: Demand steady; supply adequate; $54.

Memphis: Demand nil; trend steady; supply ample; white $46.50, yellow $46.50.

Buffalo: Demand good; trend higher; supply poor; $50.50, bulk, Boston.

Chicago: Demand fair; supply light; $46.

Seattle: Demand slow; trend weak; supply good; $57, delivered, sacked, carlots.

Kansas City: Demand fair; trend steady; supply adequate; $37.50@38.50, sacked, for yellow or white meal, bulk meal $3.50 less.

LINSEED OIL MEAL

Seattle: Demand slow; trend steady; supply limited; $83, delivered, truck lots, 29% protein.

Milwaukee: Demand fair; supply good; old process $61, new process $64.50.

San Francisco: Demand fair; supply ample; $65.

Portland: Demand slow; supply ample; trend unchanged; $78.

Los Angeles: Demand slow; trend unchanged; supply adequate; local production, 29% protein $66.

Minneapolis: Demand slow; supplies adequate; price trend steady; $44.50@45.50 November, $47.50 December, $50.50 January-March; old process $50.50; demand good for 22% flaxseed screenings oil feed $32.50.

Chicago: Demand fair; supply adequate; solvent $56.50@57, expeller $63.50@64.

Omaha: Demand fair; trend improving; supply good; 32% expeller $66, pellets $68.50; 34% solvent $58, pellets $61.

New Orleans: Demand fair; trend steady; supply adequate; 32% or higher protein $68@68.50.

Boston: Demand and supply light; 34% $68.

Kansas City: Demand slow; trend stronger; supply adequate for demand; old process meal $50.50 for first half November, $51.50 @52.50 last half; $54.50 for December, bulk, Minneapolis; solvent $44.50 for November, $46.50 for December.

Louisville: Demand reasonable; trend steady; supply normal; old process $69.80; new process $62.80.

Ft. Worth: Demand slow; supply adequate; carlots, 34% extracted, November $69.63, December $71.63.

Philadelphia: Demand and supply fair; 34% $68.

Wichita: Demand fair; supply sufficient; 34% $75.

Cincinnati: Demand poor; trend steady; supply adequate; new process $61.50; old process $68.50.

MALT SPROUTS

Cincinnati: Demand poor; trend steady; supply adequate; No. 1 $48.

Milwaukee: Demand good; supply fair; oddweights $41, evenweights $45.50.

Chicago: Demand fair; supply decreasing; No. 1 $40.

Boston: Demand and supply limited; $46 @48.

New Orleans: Demand fair; trend steady; supply limited; $48@50.50.

MEAT AND BONE MEAL

Seattle: Demand good; trend easy; supply fair; $82.50, ex-warehouse, 50% protein.

San Francisco: Demand good; supply ample; $1.45 a unit of protein.

Kansas City: Demand fair; trend weaker; supply ample; 50% meat and bone meal $71.50@73, sacked.

Omaha: Demand fair; supply ample; $87.50; meat scraps $82.50.

New York: Demand fair; trend steady; supply good; 50% $72.50, 55% $77.50, bulk; 50% $75.50, 55% $80.50, sacked.

Cincinnati: Demand good; trend steady; supply fair; 50% $74.50, sacked, f.o.b. Cincinnati.

Wichita: Demand good; supply sufficient; 50% $80, f.o.b. plant; 55%, no quotations, no offerings.

Louisville: Demand fair; trend steady; supply normal; $75@80.

Ft. Worth: Demand slow; supply sufficient; meat and bone, 50% $70@72, f.o.b. or delivered Ft. Worth.

Ogden: Supply normal; $78, in 100-lb. bags.

Portland: Demand slow; trend lower; supply ample; $1.55@1.60 a unit of protein.

Los Angeles: Demand steady; supply adequate; trend steady; $1.60 a unit of protein.

Boston: Demand cautious; supply plentiful; $1.05 a protein unit; converted 50% $65.

New Orleans: Demand fair; trend steady; supply adequate; 50% $73@75.

Buffalo: Demand fair; trend steady; supply ample; 50% meat scraps $72.50 bulk, $77.50 sacked.

St. Paul: Demand and supply fair; price trend steady; $74@78.50.

Chicago: Demand and supply fair; 50% protein $72.50@80.

MILLFEED

Minneapolis: Demand quiet; supplies ample although running time was down; bran and standard midds. $31; flour midds. and red dog $36.

Kansas City: Demand slow; trend weaker; supply ample; bran $30@30.75, shorts $30.25 @31, sacked; bran $25@26.75, shorts $27.50 @28.25, middlings $27.25@28, bulk.

Omaha: Demand fair; supply good; bran $30.75, shorts $31; bulk standard midds. $29.

Ft. Worth: Demand light; supply sufficient; carlots, burlaps, prompt, bran $38.50 @39.50; gray shorts $39.50@40.50, delivered Texas common points; $1 lower on bran and $1.50 lower on shorts compared with previous week.

Wichita: Demand poor to fair; supply ample; basis Kansas City: bran $30.75@31.25, shorts $30.75@31.25; bran and shorts declined $1.75 ton, compared with the preceding week.

Chicago: Demand for millfeeds slacked off considerably during the week ending Nov. 6, as increase in offerings was on the rise. There was a definite tendency to weakness during the period. Quotations: bran $35 @35.50, standard midds. $36@36.50, flour midds. $39@39.50, red dog $42@44.

Louisville: Demand poor; trend weak; supply good; bran $42.15, mixed feed $42.65, shorts $42.15, middlings $43.30.

Cincinnati: Demand fair; trend higher; supply adequate; bran $42.35, middlings $43.35.

Buffalo: Sales were slow and prices worked lower under lack of demand. Despite curtailed flour output, spot supplies of millfeed were available, mostly bran. Both bran and middlings declined $1.50. Red dog was off 50¢. Quotations Nov. 6: bran $38@36.50, standard midds. $37.50@38, red dog $43.50@44.

New York: Demand and supply fair; trend lower; bran $45@45.50, standard midds. $46.50@47.

Boston: Demand improved; supply ample; bran $45.50, middlings $46.

Philadelphia: Demand and supply fair; bran $45.50, standard midds. $46, red dog $54.

New Orleans: Demand slow; trend easier; supply adequate; bran $41@42.75, shorts $40 @41.75.

Memphis: Demand poor; trend steady; supply ample; wheat bran $38, gray shorts $38, standard midds. $38.

Seattle: Demand fair; trend steady; supply ample; $35, delivered common transit points, carlots.

Portland: Demand slow; supply ample; trend unchanged; $35.

Ogden: Supply average; to Utah and Idaho: red bran and mill run $36, middlings $41; to Denver: red bran and mill run $43, middlings $48; to California: red bran and mill run $43.50, middlings $48.50, f.o.b. San Francisco and Los Angeles.

San Francisco: Demand fair; supply ample; $43.25; red bran $48.25.

Los Angeles: Demand slow; trend weaker; supply ample; standard mill run $43@44; red bran $47@48.

MINERAL FEED

Seattle: Demand fair; trend steady; supply good; mixer mineral $48, ex-warehouse; all-purpose mineral $55, ex-warehouse.

San Francisco: Demand steady; supply good; all-purpose with iodine $70.

Sioux City: 50-lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

Ft. Worth: Demand fair; supply ample; all-purpose granules $89, block $94; mineral

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phosphorus 6% granules $106, block $110; cattle-sheep mineral 7% phosphorus granules $99, block $103; hog mineral phosphorus 3½% granules $88; phosphorus 2% $78 (all in 50-lb. paper bags).

Wichita: Demand good; supply ample; all-purpose with iodine, 50-lb. blocks $95, 100-lb. bags $90, f.o.b. plant.

Ogden: Supply normal; $108 in 50-lb. blocks; $98, granular, 50-lb. bags.

MOLASSES

Cincinnati: Demand fair; trend lower; supply adequate; 12⅝¢ gal., New Orleans.

Louisville: Demand slow; supply normal; trend easy; 12⅝¢ gal.

Ft. Worth: Demand slow; supply adequate; blackstrap 14½¢ gal., f.o.b. Houston; delivered Ft. Worth truck $32.49, seller's market price on date of shipment.

Minneapolis: Business improved and prices continued a downward trend which has been under way for several months; supplies ample; 12@12½¢ gal., f.o.b. New Orleans.

Los Angeles: Demand steady; trend unchanged; supply ample; $26 bulk, tank cars; $26.25 bulk, tank trucks.

Boston: Demand fair; supply ample; 21½¢ gal. in tank cars.

Memphis: Demand poor; trend lower; supply ample; blackstrap 12¢ gal., tank car, f.o.b. New Orleans.

Buffalo: Demand and supply fair; trend steady; 21½¢ gal., f.o.b. Albany.

Atlanta: Demand good; trend steady; supply limited; citrus $26, bulk, f.o.b. Florida producing points.

Milwaukee: Demand fair; supply good; blackstrap 13½¢ gal., f.o.b. New Orleans.

Seattle: Demand slow; trend weak; supply good; $26, f.o.b. Seattle, tank car lots or truck lots.

San Francisco: Demand and supply good; $26, f.o.b. cars Richmond, Cal.

Kansas City: Demand slow; trend weaker; supply ample; 11¾@12¢ gal., tank car, f.o.b. New Orleans.

New York: Demand fair; trend steady; supply good; blackstrap 21¢ gal., tank cars, tank wagons, f.o.b. New York.

NIACIN

New York: Trend steady; $8 kilo, 50-kilo lots; $8.10 kilo, 10-kilo lots; $8.20 kilo, 5 and 2½-kilo lots; $8.30 kilo, 1-kilo lots; freight prepaid or paid to destination.

OAT PRODUCTS

Seattle: Demand fair; trend firmer; supply ample; whole $58, ground $58, rolled $60, all ex-warehouse, l.c.l., sacked.

Ft. Worth: Demand slow; supply sufficient; oat millfeed $46.25, reground oat millfeed 8% protein $28.75, 3% $24.50.

Louisville: Demand fair; trend steady; supply normal; reground $19.80, rolled $86.30, feeding oatmeal $79.30, pulverized white oats $49.80, crimped white $70.30.

Portland: Demand slow; supply ample; trend unchanged; rolled $60, ground $57, cleaned $59.

Los Angeles: Demand fair; trend unchanged; supply adequate; pulverized, local production $60.

Boston: Demand steady; supply adequate; white pulverized $53, ground mixed $46.70, reground oat feed $21.

Memphis: Demand poor; trend steady; supply ample; 2½% protein, reground oat feed $19.30.

New Orleans: Demand poor; trend steady; supply ample; ground oats $69@69.50; pulverized $69.50@70.

Philadelphia: Demand and supply fair; pulverized white $52.50; Canadian oat feed $25; domestic oat feed $22.50.

Minneapolis: Slight pickup noted in demand, mainly in pulverized oats; supplies adequate; feeding rolled oats $53; standard pulverized $43; feeding oatmeal $69; crimped $60.50, reground oat feed $13.

Chicago: Demand fair; supply adequate; reground oat feed $13; fine ground feeding oatmeal $70@71; feeding rolled oats $50@81.

Cincinnati: Demand fair; trend steady; supply adequate; reground oats $21.50; pulverized white oats $49; rolled oats $87.50@88.50.

OYSTER SHELL

Cincinnati: Demand fair; trend steady; supply adequate; $21.75.

Louisville: Demand fair to good; trend steady; supply normal; in 80-lb. paper bags $23.17, in 50's $23.42, in 25's $25.67.

Portland: Demand slow; supply ample; trend unchanged; western $30; eastern $38.50; granite grits $26; oyster shell flour $16.

Seattle: Demand and trend steady; supply good; eastern $30, l.c.l., ex-warehouse.

San Francisco: Demand fair; supply ample; local $16, eastern $26.

New Orleans: Demand good; trend steady; supply ample; $15@18, local origin.

Boston: Demand and supply steady; $25.24 in paper.

Los Angeles: Demand and trend steady; supply ample; $14.80.

PEANUT OIL MEAL

Atlanta: Demand slow; trend steady; supply limited; 45% $59.

Milwaukee: Demand and supply fair; 26% $48.

New Orleans: Demand fair; trend steady; supply sufficient; 45% $56@57.

PEAT MOSS

San Francisco: Demand fair; supply ample; $4.75 bale.

New Orleans: Demand fair; trend steady; supply adequate; standard bale German moss $3.70@3.95.

Boston: Demand and supply steady; $3.15 bale in carlots.

Los Angeles: Demand fair; trend steady; supply adequate; Canadian, 6.1 cu. ft. bale $3.70.

Chicago: Demand and supply moderate; $3.85@3.95 standard 7¼ cu. ft. bale.

Seattle: Demand fair; trend steady; supply good; $3.50 bale, l.c.l., ex-warehouse.

Philadelphia: Demand slow; supply light; $3.12, f.o.b. pier.

Portland: Demand slow; supply ample; trend unchanged; $3.25 bale.

POTASSIUM IODIDE, U.S.P.

Cincinnati: Trend steady; 90% KI in calcium stearate or carbonate mixtures, 250-lb. drums $1.81; 200 lb. in 100-lb. drums $1.81; 100-lb. drums $1.83; 25-lb. drums $1.86; f.o.b. Cincinnati.

New York: Trend steady; granular or crystals $1.90 lb. in 250-lb. drums, $1.92 lb. in 100-lb. drums, $1.95 lb. in 25-lb. drums; 90% KI in calcium stearate or carbonate mixtures, $1.81 lb. in 250-lb. drums or 200-lb. lots, $1.83 lb. in 100-lb. drums, $1.86 lb. in 25-lb. drums; f.o.b. New York, New Jersey or Pennsylvania; freight allowed to destination on 100-lb. drums or larger packings.

RIBOFLAVIN

New York: Trend steady; feed grade (in feed supplements) 4½¢ gram in 3.36 to 16 gm./lb. mixtures, freight prepaid or paid to destination.

Cincinnati: Trend steady; feed grade (in feed supplements) 4¢ gram in 3.36 to 16 gm./lb. mixtures, freight prepaid or paid to destination.

RICE BY-PRODUCTS

San Francisco: Demand fair; supply ample; bran $45, polished $49.

Atlanta: Demand fair; trend steady; supply ample; bran $38.

New Orleans: Demand fair; trend steady; supply ample; $40@46 on bran, Louisiana mills; no quotes on hulls.

Los Angeles: Demand slow; trend unchanged; supply ample; bran, California production, high fat content $45.

Ft. Worth: Demand fair; light offerings; carlots, rice bran $24@25, prompt shipment, f.o.b. south Texas rice mills; hulls $2, f.o.b. mills.

SCREENINGS

Minneapolis: Receipts small but enough for limited demand; prices unchanged; demand good for oil type flax screenings; country run $15@22, lights $2@10, mediums $10@20, heavies $20@30; Canadian, bulk, Duluth $13.50, nominal; Canadian ground $22.50; flax screenings $22; oil type flax screenings 15% basis $28.

Buffalo: Demand and supply fair; trend steady; ground, bulk $28, New York, lake and rail; unground, bulk $21.75.

Los Angeles: Demand better; trend firmer; supply tighter for nearby; milo $2.35 cwt., bulk.

Chicago: Demand fair; supply plentiful; ground grain screenings $28.50; Canadian, bulk $19.

Cincinnati: Demand fair; trend steady; supply fair; Canadian $25.50; barley $19, both bulk, delivered, Cincinnati.

Ft. Worth: Demand slow; supply sufficient; 12% protein, ground $30@38, depending on quality and location, prompt, sacked, delivered Ft. Worth.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.23@25.35.
Kansas City: $24.18@25.
Memphis: $22.20@22.47.
Minneapolis: $25.93@26.06.
Philadelphia: $24.32@24.45.
St. Louis: $24.14@24.27.

SORGHUMS

Cincinnati: Demand fair; trend steady; supply adequate; $2@2.20.

Ft. Worth: Demand fair; offerings dry milo light; carlots, bulk, No. 2 yellow milo $1.95@1.98, delivered Texas common points.

SOYBEAN OIL MEAL

Philadelphia: Demand and supply fair; $44, bulk, Decatur.

Seattle: Demand steady; trend easy; supply good; $78, delivered, carlots.

San Francisco: Demand fair; supply ample; $76.34.

Atlanta: Demand fair; trend steady; supply ample; 44% $61.

Decatur: Demand and supply fair; 44% bulk, unrestricted $44.50@45.

Chicago: There was increased interest in soybean oil meal sales displayed during the week ending Nov. 6, and prices rose somewhat higher during the period. There seemed to be a feeling of optimism on the part of buyers. Quotations: 44% soybean oil meal $54.50@55.

Los Angeles: Demand slow; trend weaker; supply ample; $75.34.

Boston: Demand slow; supply ample; 44% $43, 50% $50, both f.o.b. Decatur.

Memphis: Demand fair; trend lower; supply plentiful; prime 41% solvent $51, sacked, f.o.b. Memphis.

New Orleans: Demand good; trend steady to easier; supply sufficient; 44% $67@67.50.

Minneapolis: Demand fair; supplies plentiful; prices unchanged; $51.25@52.25, bulk, delivered, Minneapolis.

Milwaukee: Demand and supply good; $44, bulk Decatur.

Kansas City: Demand fair to good; trend stronger; supply adequate; meal for Kansas City and western shipment $42@42.50, bulk, Decatur; unrestricted meal $44@44.50.

Omaha: Demand fair; trend improving; supply goodq; 44% solvent $57.50, pellets $60; 41% expeller $63.50, no pellets.

Ft. Worth: Demand good for immediate requirements; supply sufficient, carlots 44% $66@68, depending on origin and tonnage; trucks $60.50.

Cincinnati: Demand fair; trend lower; supply adequate; $44, bulk, Decatur.

Louisville: Demand poor; trend easy; supply normal; $56.73.

Wichita: Demand fair; supply sufficient; 44% $61, 50% $69, f.o.b. Wichita.

Portland: Demand slow; trend higher; supply ample; $40, f.o.b. Decatur.

Ogden: Supply normal; $37@92.

TANKAGE

Omaha: Demand fair; supply ample; $80.

Kansas City: Demand fair; trend weak; supply ample; 60% digester $71.50@75, sacked.

Wichita: Demand good; supply sufficient; 60% $80, f.o.b. plant.

Ft. Worth: Demand slow; supply sufficient; 60% digester $80@82, f.o.b. Ft. Worth.

St. Paul: Demand and supply fair; price trend $2 ton lower compared with last week; $72.

Chicago: Demand and supply fair; 60% protein $72.50@85.

Cincinnati: Demand good; trend steady; supply short; 60% digester $83.50, sacked, f.o.b. Cincinnati.

Louisville: Demand fair; trend steady; supply normal; 60% $77.50@82.50.

New Orleans: Demand fair; trend easier; supply ample; 60% $81@91.

VITAMIN E FEED SUPPLEMENT

Cincinnati: Demand good; trend steady; 1,000 lb. in 100-lb. drums $1.70 lb., less than 1,000 lb. in 100-lb. drums $1.80; 1,000 lb. or more in 25-lb. drums $1.75; 25-lb. drums $1.85; freight allowed to destination.

Rochester, N.Y.: Demand and supply good; trend steady; 50- and 100-lb. drums $1.80 lb., 25-lb. drums $1.85 lb., f.o.b. manufacturing plants, freight allowed to destination.

New York: Demand and supply good; trend steady; 50- and 100-lb. drums $1.80 lb., 25-lb. drums $1.85 lb., f.o.b. manufacturing plants, freight allowed to destination.

WHEAT GERM MEAL

Buffalo: Demand fair; trend higher; supply poor; commercial grade $54, sacked, f.o.b. Buffalo.

New Orleans: Demand fair; trend steady to easier; supply adequate; $65@67.

French Feeds Banned

WASHINGTON — The country of Switzerland has announced that imports of French feed grains into Switzerland have been banned since Oct. 23 in order to prevent the spread of hoof-and-mouth disease. The embargo is expected to result in unexpected market opportunities because prior to the announcement of the embargo, France, with a large quantity of barley for export, might have been counted on to supply 150,000 to 200,000 tons—almost half—of the Swiss probable feed grain import requirements.

HAROLD BUIST

(Continued from page 1)

can Feed Manufacturers Assn. from 1945 to the present time, with the exception of 1955, and a member of the executive committee of the board of directors from 1946 to the present, with the exception of 1955. From 1948 through 1953 he served as vice chairman of the AFMA board and was chairman of the finance committee for many years. He was a member of the special industry advisory committee of the AFMA and had taken an active part in many special assignments.

Mr. Buist was a member of the board of directors of the Pabst Brewing Co., Milwaukee. He organized the Chicago Curling Club, and this sport was his principal hobby. The Skokie (Ill.) Country Club was among his affiliations.

Mr. Buist was born in Cardiff, Wales, Great Britain, on Sept. 4, 1897. He served in the Royal Flying Corps during World War I as a fighter and test pilot, and came to the U.S. in 1921 to go in the accounting business with an uncle at Fort Wayne, Ind.

Surviving are the widow, Nelle, 145 Sheridan Road, Glencoe, Ill.; a daughter, Mrs. Lawrence Davis, Jr., Hartford, Conn.; and a brother and sister who live in England.

Protein Oil Meal Futures Prices Up

MEMPHIS — Protein oil meal futures generally moved up slightly at the close of trade on Nov. 6, compared with Oct. 30, on the Memphis Board of Trade.

Trading was slow for the period until Nov. 6, when some hedge lifting by trade interests stimulated the market. On the minor advance following, selling from first hands was in evidence. Spreading between soybean oil meal and cottonseed oil meal developed in more deferred contracts.

Some persons in the trade are looking for increased demand in mixed feed due to cold weather.

Unrestricted soybean oil meal closed Nov. 6, 40¢ to $1 ton higher than on Oct. 30, Eastern Trunk Line soybean oil meal was 25¢ to 50¢ higher, bulk solvent cottonseed oil meal was 10¢ to 90¢ higher, and sacked old process cottonseed oil meal was unchanged to $1 lower.

Trading for the period amounted to 6,100 tons of unrestricted soybean oil meal, 1,500 tons of Eastern Trunk Line soybean oil meal, 2,400 tons of bulk solvent cottonseed oil meal and 200 tons of sacked old process cottonseed oil meal.

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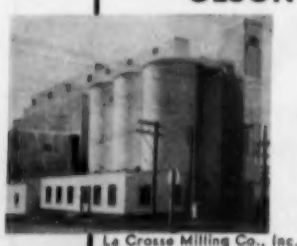
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FAT

(Continued from page 1)

fat prices, he said, but not the most important reason.

Lard has declined relative to the price of hogs and tallow relative to the price of cattle. The comparative decline of lard versus hogs, Dr. DeGraff said, is so important as to have lowered the price of hogs to producers during the last five years by about 60¢ cwt.

Dr. DeGraff pointed to such things as the big increase in soybean oil output and decreased markets for fats and oils in soap and paints. In food fats there has been a shift from animal fats to vegetable fats in the diet. The shift has transferred 1¼ billion pounds a year from the market for animal fats to the market for vegetable fats, with a resulting price and value shock to the livestock industries.

Dr. DeGraff presented data to show that fats do not constitute so large a percentage of the American diet as is often stated. A widely quoted figure of 40% is derived as the percentage of fat calories in the per capita daily food supply available at the retail level of distribution. However, this is not the food supply that is eaten. Between retail availability and what actually is ingested are all the cut-outs and throw-outs at the retail store, losses and wastage in preparation and cooking and what goes into the garbage pail.

Only about 70% of the fat calories in the per capita food supply at the retail level are actually ingested, Dr. DeGraff estimates.

He went on to say that about 35%, rather than 40% of the calories in the American diet are furnished from fats.

"Moreover, we do not have a trend in America toward more of our calories from fats, as often has been alleged," Dr. DeGraff declared. "The reported increase in fat in our diet in recent years compared to earlier decades is almost entirely in the fat content of carcass meats at the retail level. These are the fats which are cut off and thrown out in largest proportions.

Not Cause of Coronaries

"The increasing incidence of coronaries cannot be the result of increased fat consumption (increased animal fats) in our diet because we are not eating increased amounts of such fats. As a layman in this field, I cannot help but wonder if the researchers should not look toward the questions of exercise and stress as factors in the coronary problem. I wonder how fat per se (especially animal fats) can be a major factor in the increased incidence of coronaries when the evidence is we are not ingesting increased amounts of such fats."

Summarizing the trends in fats and oils, Dr. DeGraff noted that the U.S. now has an excess of fats over what the domestic market can utilize without large exports, and the domestic per capita market is not very expandable, regardless of price. The world market is much more expansible, but only on a price basis.

Based on these developments, Dr. DeGraff said that the livestock industries will have to de-emphasize fat production.

He said that it now appears that (a) milk-solids-not-fats will have to carry more of the burden of milk price in the future because butterfat will carry less, and (b) red meat will have to carry a larger share of livestock prices because lard and tallow will carry less.

"On the other hand," he said, "we can change the style in hogs and have made a start toward doing so. We have not yet done the same with steers, but I think we will."

OKLAHOMA

(Continued from page 6)

Managers of plant eating facilities also could be assisted, with benefit to worker-diners and increased sales of poultry and poultry products.

The 11 million employed married women want to know about packaged poultry products so that they can prepare nutritious meals quickly and easily.

The "golden age" market—16 million people who are 65 years and older—is the sixth market. Such people enjoy good food, but should reduce their calorie intake, which means that the high protein and low fat values of eggs, chickens and turkeys should be pointed out to them. Seventh is the 1,550,000 brides annually, who soon discover how little they know about planning meals three times daily and therefore are receptive to information about the various ways of cooking and serving eggs, and preparing chicken and turkey.

Team Effort

Dr. Glenn C. Holm, dean of veterinary medicine, Oklahoma State University, stated that today the production of the nation's most prized foods—animal proteins—is a team effort that involves not only the beef cattleman, the dairyman, the swine grower, and the poultryman, but the research worker, the feed manufacturer and the local veterinarian. The basic need for the members of the team is coordination of their efforts through better understanding and education, he said.

Today's graduating veterinarian has greater knowledge of biochemistry, nutrition, physiology, genetics, toxicology and immunology than the graduate of the 1940's. A recent survey report presented to the American Veterinary Medical Assn. meeting in Cleveland indicated that over half of the calls made by practicing veterinarians were for non-infectious cases and that a large percentage of these were nutritional imbalances or deficiencies.

Egg Production, Marketing

Sewell Skelton, Oklahoma extension poultry marketing specialist, complimented the feed industry men for their assistance in bringing about Oklahoma's new egg marketing law which became effective on Nov. 1.

He stated that, with a marketing system in operation, the egg production program must be accelerated if Oklahoma is to produce the quality eggs that now are in demand. He named several major problem areas in which the feed men could render important aid. Egg producers should be encouraged to even off production so as to avoid the extreme surplus of eggs in the spring and the extreme deficit of eggs in the fall. Mechanical cooling of eggs on the farm, going beyond the cooling by evaporative devices, is needed. Producers should determine how many hens they can handle most profitably, as determined by available markets, family labor and facilities.

Farm flocks might well produce the white eggs, which are in demand, rather than brown eggs. Laying hens should be confined during the year of production. Management practices conducive to production of clean eggs are a must. Finally, consumer education is essential if the housewife is to understand the new egg marketing system and know that basically it is a consumer program intended to better her situation as a buyer of eggs.

Following Mr. Skelton's discussion, Lloyd Larson of the Midwest Feed Manufacturers Assn. moderated a panel discussion of the points which Mr. Skelton had outlined. Panel members told how the points, comprising the "Oklahoma Program of Profit Pointers," had helped them in their respective lines of work. Panel members were feed dealers Woodrow Gray, Purcell, and Walter Starks, Prague; feed salesmen Kenneth Harder of Shawnee and Deloyd Wallis, Woodward; Pontotoc county extension agent C. H. Hailey of Ada; and Harvey Russell, vocational agriculture teacher at Prague.

C. H. Huffman, Michigan State University dairyman, reviewed systems of feed evaluation intended to give comparable net energy values to roughages and concentrates. "It is evident," he said in conclusion, "that there is no good measurement of the productive energy equivalents of roughages and concentrates. In making substitutions of grain for roughages, the grain feeding rules suggested by the producer's agricultural experiment station should be followed."

Dr. J. C. Hillier of the animal husbandry department at Oklahoma State University discussed a feeding trial which indicated that lysine is the first limiting amino acid in the protein of milo. He said that although results were somewhat confusing in swine feeding trials in which protein supplements were formulated to supply varying levels of lysine, generally those supplying the higher levels of lysine gave the best results.

Dr. L. S. Pope, also of the OSU animal husbandry department, reported on a trial of high-silage rations and deferred feeding of western feeder lambs in which one-half of the lambs in each lot was implanted with 6 mg. of stilbestrol. Stilbestrol increased the gains in every treatment. Average increases were 16% for the standard feeding program and 18% for the deferred feeding program. There was little difference in dressing percentage. The stilbestrol-implanted lambs graded slightly lower. No harmful effects were noted.

Dr. Arnold B. Nelson of the animal husbandry department reviewed tests in which urea was used as a source of part of the protein in low-quality wintering rations for beef cattle.

The results, he said, indicated that urea was not efficiently utilized in protein pellets fed as supplements to dried native grasses, unless trace minerals were added. Addition of trace minerals resulted in partial to apparently complete utilization of urea in the various trials. Utilization of urea was increased in one trial in which dehydrated alfalfa meal was added to the urea-containing pellet. Apparently the trace mineral content of a urea-containing pellet is of lesser importance in protein pellets when fed as supplements to prairie hay. A urea-molasses mixture containing trace minerals satisfactorily replaced cottonseed meal in the wintering ration (dry range) of pregnant beef cows.

Dairy Rations

E. R. Berousek, OSU dairy professor, discussed development of dairy rations to meet Oklahoma conditions. He named lack of high quality hay, an occasional protein problem because of inadequate amounts of protein in the concentrate, occasional insufficient feeding or overfeeding, and lack of adequate pastures as feeding problems.

He urged that the feed men encourage their patrons to improve their roughage by early cutting of hay, that they sell a feed mixture of the proper protein content to complement the roughages, and that they recommend the feeding of the mixture in the proper amounts. Finally, he suggested that patrons be urged to join a dairy herd improvement association so they might gain the information needed for doing a good job of feeding.

Dr. Pope gave another report on research, in which he said that young suckling beef calves were stimulated by low level implants of stilbestrol administered at approximately 100 days of age. This practice was decidedly profitable only when weight and grade at weaning were considered.

However, during the period from weaning to start of the feedlot phase of the test, the stilbestrol-implanted calves suffered greater weight loss, and this increased shrink reduced considerably the financial advantage at the end of the feedlot phase

Calves apparently show less response to stilbestrol than is commonly observed with older cattle in the feedlot, though this may be due in part to the greater growth response in the younger calf.

The Oklahoma conference is sponsored by the university and the Oklahoma Feed Manufacturers Assn., Oklahoma State Department of Agriculture and Midwest Feed Manufacturers Assn.

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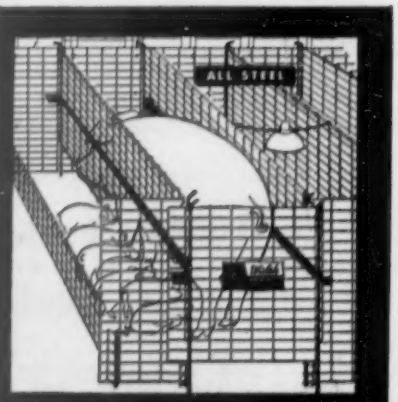

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ALABAMA

(Continued from page 7)

tity of roughage available and on good management.

In Auburn's studies, the average weight of Jersey and Guernsey heifers fed no grain was about 720 lb. at 36 months of age as compared with 750 lb. for those dairy animals receiving grain all the way to calving. "More important, however, was the fact that with first calf the cows in the no grain group produced as much milk as those on the highest level of grain feeding," Dr. Autrey pointed out.

Poultry Report

D. F. King, head of the poultry husbandry department, reported on studies relating to protein and amino acid requirements of layers and nutrition requirements of broilers. He said results indicated that at least an 18% protein ration should be fed layers during the summer months.

Speaking of amino acid requirements of laying hens, Prof. King said the tryptophan requirement is 0.14% of the ration, lysine 0.49% and methionine 0.32%.

As for broiler nutrition, Prof. King said results of studies showed the mineral molybdenum has no beneficial effect when added to broiler feed rations and that growers should go slow in using it.

Cattle Feeding

Dr. W. B. Anthony, API Experiment Station animal nutritionist, said that silage offers the Alabama beef cattleman the best oportunity for lowering the cost of production of high quality slaughter cattle when properly supplemented with protein, minerals, growth promotants and a small amount of extra energy.

Dr. Anthony added that "Alabama beef, produced to insure a reliable standard of excellency at prices more competitive with other forms of meats, will insure future prosperity for the Alabama beef producer."

He said young cattle cannot be finished to a desirable slaughter finish on Alabama pastures. "On summer pastures, yearling cattle can be expected to gain about 200 lb. for the pasture season and to carry a 'utility' slaughter finish at the end of grazing," he reported. "Young cattle grazed on small grain pastures may come off grazing in the spring carrying a standard finish. Two-year-old steers will gain over 2 lb. per head daily on small grain pastures but they will not carry the most desirable finish off grazing."

"Efficiency in production of slaughter cattle can best be achieved by working with a system which includes grazing, possibly preceded by dry lot feeding of harvested feeds, and always followed by a period of dry lot finishing on balanced rations," Dr. Anthony explained.

Dr. George Hawkins, station associate dairy husbandman, said variation in palatability of forages results in low intakes of forage dry matter and of total digestibile nutrients. "This appears to be the principal limiting factor in milk production when fed with a good concentrate," he added. "In addition, protein and mineral intake is limiting nutrients in some cases. Particularly, this is true when sericea and peanut hay supply a high percentage of the nutrients for growing dairy calves."

Feed industry representatives toured the poultry, dairy, swine and beef cattle farms of the experiment station during the conference. They briefly observed poultry nutrition and disease studies, dairy forage grazing projects, swine concrete dry lot feeding and performance testing studies, and beef cattle performance testing research.

At the conference banquet, the conferees saw the new feed industry movie, "Old MacDonald." Merlin T. Bryant, Brundidge, secretary-treasurer of the Alabama Feed Assn., presided.

Drylot Hog Feeding

An Auburn swine research worker predicted that production of hogs in the dry feed lot will grow in popularity.

"Certainly a prediction for an increase in hog production on concrete (dry lot feeding) is in order," declared Dr. Howard Tucker, associate animal husbandman, during a panel discussion of feeding pigs in confinement.

"Increases in population, limitation on productive acres, trend toward more efficiency through specialization, fencing problems, hauling feed and water, uncertainty of good forage programs, and control of diseases and parasites all encourage production of market hogs on concrete," Dr. Tucker explained.

Dr. Richard Winters, southern technical director, American Cyanamid Co., participated in the panel discussion with Dr. Tucker. He discussed disease problems that are encountered in raising pigs. He pointed out that disease is an ever present problem both in the pasture and on concrete and that the feeder, feedman, physiologist, veterinarian and pharmacist will need to cooperate fully in solving disease problems.

Broiler Pigmentation

Dr. E. J. Day, poultry nutritionist, Mississippi State College, reported that feed manufacturers have found it advantageous to manufacture broiler feed that will produce an abundance of yellow color in the shanks and skin of the birds.

"While it is true that outbreaks of diseases, such as coccidiosis and respiratory diseases, result in poorly pigmented birds, it is well known that the degree of pigmentation depends primarily on the level of xanthophyll in the ration," Dr. Day said.

"High energy rations need to carry higher levels of xanthophyll than low energy rations to assure an adequate intake of xanthophyll," he explained.

Jack Insco, head of the University of Kentucky poultry department, discussed mineral nutrition for poultry.

Auburn's Poultry Science Club served a chick-n-que luncheon to feed industry representatives the second day.

Feed Law Uniformity

Feed laws were discussed by a commercial research leader as "getting behind from an inter-state point of view."

Dr. Marvin Wilkening, Decatur, director of research, Alabama Flour Mills, said at the closing session of the conference that more uniformity is needed in poultry and livestock feed laws of the states and that other regulations should be changed or abolished because they have become out-dated. He spoke during a panel discussion on feed laws and regulations.

Other participants in the discussions were Dr. George Marsh, director, division of agricultural chemistry, Alabama Department of Agriculture and Industries, and John Weeks, director of research, Cosby-Hodges Milling Co.

W. D. Salmon, API station animal nutritionist, discussed problems of the feed industry, Dr. Herbert D. Wilgus, Peter Hand Foundation, Chicago, spoke on "Service Is Our Business," and Alexander Nunn, editor, The Progressive Farmer, made predictions on the future of formula feeds and farming in the South.

Presiding at the conference sessions were Sam Malone, Jr., Decatur, president of the Alabama Feed Assn.; W. G. Scott, Birmingham; J. C. Woodard, Birmingham, past president of the feed association, and Charles Miller, Jr., Piedmont, president of the Alabama Poultry Industry Assn.

Millfeed Production Declines

Production of millfeeds in tons for week ending Nov. 2, and prior two weeks, together with season total of (1) principal mills in Nebraska, Kansas and Oklahoma and the cities of Kansas City and St. Joseph; (2) principal mills of Minnesota, Iowa, North and South Dakota and Montana, including Minneapolis, St. Paul and Duluth-Superior; (3) mills of Buffalo, N.Y. Production computed on the basis of 72% flour production.

	Southwest* Weekly production	Southwest* Crop year to date	Northwest* Weekly production	Northwest* Crop year to date	Buffalo† Weekly production	Buffalo† Crop year to date	Combined** Weekly production	Combined** Crop yr. to date
Oct. 26-Nov. 2	28,888	462,517	14,652	246,614	9,966	193,452	53,506	‡902,583
Previous week	‡28,844		‡14,316		10,583		‡53,743	
Two weeks ago	28,221		‡13,480		10,551		‡52,252	
1956	28,425	468,857	14,469	250,263	11,926	197,112	54,820	916,232
1955	25,287	462,966	14,371	248,511	10,331	140,331	50,107	851,808
1954	23,818	455,951	14,401	248,938	12,100	191,486	50,319	896,375
1953	23,102	445,121	15,665	264,416	11,200	185,928	49,967	895,465

*Principal mills. **76% of total capacity. ‡All mills. §Revised.

BEEF PRICES

(Continued from page 7)

clining for three years. The 1957 crop has been estimated at 42.3 million head, 2% smaller than last year, and 3% below the record set four years ago. While the calf crop has declined 3% in the three years, our human population has increased 5%. Thus the 1957 calf crop is 8% smaller in proportion to our population than it was four years ago. The smaller calf crops point to correspondingly smaller supplies of beef and to relatively higher prices for cattle over the next few years, Mr. Simerl points out.

Demand for Beef: Consumer demand for high choice and prime beef seems to be less strong this fall than a year ago. This change reflects the uncertain business outlook and a more cautious spending policy on the part of the high-income group. The next trend in the demand for highly finished beef is quite uncertain at this time.

Demand for other grades of beef remains very strong. Some workers have been laid off in recent weeks, but this is a normal situation even during periods of high-level prosperity. Employment was sustained at a high level in 1956 and 1957 by increasing expenditures by governments and by business. Such outlays seem to be about to be cut back. Recently family spending has increased, and this increase may furnish enough buying power to keep employment up in 1958.

Judging from past history, he concludes, the seasons in which cattle prices are most likely to be good are as follows: Cows and utility steers, March to June; commercial and good steers and heifers, May to July; choice steers and heifers, July to October; and prime steers, September to January.

Vac-U-Vator Sales Manager Named

BATAVIA, ILL.—James Finnegan has been appointed sales manager of the Vac-U-Vator division of Dunbar Kapple, according to Robert Johnson, general sales manager.

Mr. Finnegan, the inventor of the Vac-U-Vator pneumatic grain handling machine, has served for a number of years as product manager of the division. The machine is used to load and unload flat storage buildings and bins, turn grain, track-load from trucks to boxcars, etc.

Mr. Finnegan has been associated with the grain industry since 1932. He will continue to be headquartered in the Vac-U-Vator sales office in Batavia.

FARM FORUM SET

NEW ORLEANS — The annual Southern Farm Forum will be held here Jan. 23-24, according to Ralph Brown, Orleans Parish agent, who is serving as secretary of the committee. Panel discussions will include "Effects of Expanding Industry on Southern Agricultural Production" and "The Human Element in Changing Southern Agriculture."

Named Acting Head Of Illinois Department

URBANA, ILL.—Dr. H. M. Scott has been named acting head of the department of animal science at the University of Illinois College of Agriculture. He takes the place of Dr. L. E. Card, recently named group leader for the University's team of agricultural scientists in North Central India.

In announcing Dr. Scott's appointment as acting head, Dean Louis B. Howard of the College of Agriculture said that Dr. Card had asked to be relieved of his headship responsibilities when he accepted the India assignment. Dr. Scott has been head of the department's poultry division since 1947.

From 1941 to 1947 Dr. Scott was professor and head of the poultry department at the University of Connecticut. He came to the University of Illinois as professor of animal science and poultry division head in 1947.

Dr. Scott received the $1,000 award in poultry nutrition and citation of the American Feed Manufacturers Assn. in 1955 for his outstanding research work. This past summer he was named a Fellow in the Poultry Science Assn.

Dean Howard has appointed a committee with Dr. Tom S. Hamilton, associate director of the Agricultural Experiment Station, as chairman to recommend candidates for the permanent headship of the department. Other members of the committee include H. G. Russell, Dr. A. V. Nalbandov, Dr. R. M. Forbes and Dr. E. G. Becker of the department of animal science; Dr. G. W. Salisbury, head of the department of dairy science; and Dr. L. E. Boley, College of Veterinary Medicine.

Dr. Cliff D. Carpenter To Resign Position

CHICAGO—Dr. Cliff D. Carpenter will resign his position as president and chief executive officer of the Institute of American Poultry Industries as of July 1, 1958, a report from the organization's board of directors indicates. However, Dr. Carpenter will continue to serve the group but with less active and more specialized duties.

Dr. Carpenter has been executive head of the institute since 1954. It is expected that a successor will be named during the institute's Fact-Finding Conference in Kansas City in February, 1958.

MARKETS

(Continued from page 2)

Oregon and Washington crop has been processed.

Slow movement of dairy feeds was reported by most feed mixers. Alfalfa hay prices were unchanged with a $24-25 ton range, f.o.b. Seattle and Portland, for baled No. 2 green grade offerings.

Wheat millfeed prices leveled off during the trading period and appeared steady at the close in front of a slow demand and light supplies. Oregon and Washington millfeed production dropped to 5,700 tons, 250 tons down from the previous week.

Butterfat prices to producers declined another 1¢ lb. at both Portland and Seattle as the result of a similar wholesale butter market price cut.

Producer paying prices for large eggs declined 1 to 2¢ doz. at Portland and Seattle as the result of wholesale market cuts forced by lower outside market values.

Portland's dressed turkey market turned firm and there were some reports that processors were offering premium prices for birds to be delivered just before Thanksgiving. Hen

turkeys generally brought growers 27¢ lb. on an eviscerated basis at Portland with A grade young toms quoted at 23¢.

Live chicken prices were unchanged and steady during the week.

California

There was practically no change in formula feed prices this past week and the volume remained steady on laying and dairy feeds.

About the only change in feed ingredient prices was some weakness in copra cake, millfeeds and soybean meal.

The local trade was disappointed when milo prices held steady to firm, but weather conditions in the milo areas in Texas, Kansas and Nebraska evidently were discouraging.

Egg prices advanced on medium and small sizes, but declined on large due to the marketing of excessive stocks. Live poultry prices were steady but processed birds were lower and ice packed fryers sold down to 29½ to 31¢ lb.

The weather generally throughout the state was wet, with emphasis on the southern part. Places in the Imperial Valley reported as much as 2 in. rain, the heaviest in 25 years. A lot of damage was reported from cotton producers and in addition the muddy conditions in feed lots delayed the influx of feeders for winter feeding.

Northeast

The feed sales pattern was somewhat mixed last week. Some formula feed manufacturers reported a sales increase and others a decrease. In general, business gained for companies concentrating in dairy feeds and eased for poultry feed manufacturers.

One big feed manufacturer's trade climbed apparently because it has an aggressive sales campaign underway.

Egg mashes remained the sales leaders. Turkey feed demand was rapidly falling off, although a few birds are being held over for the Christmas trade. Broiler feed demand was just fair.

Egg prices continued to rise and the demand exceeded the supply.

Broiler prices held just about steady at an average of 17¢ lb., levels which are said to be unprofitable to growers.

Turkey farmers have also had rough going this year. Oven-ready birds were offered at 35@37¢ lb. and wholesale prices were down to 25@26¢, levels sharply below a year ago.

Ingredient prices were mixed during the week. Corn continued to decline and was off 2@3¢. Oats and barley held up fairly well. Feed wheat was unchanged. Milo was slow coming in and hasn't begun to show its weight on the market.

Soybean oil meal, cottonseed oil meal and gluten meal were unchanged. Linseed oil meal was slightly stronger.

Meat meal and tankage were weak but unchanged. There was some distress fish meal offered, but the tonnage wasn't great enough to have an effect on the market.

One large company reduced its price of gluten feed by $3 late in the day on Nov. 6. Nearby hominy still is very firm in price. Alfalfa meal held steady. Millfeed sales were slow and both bran and middlings declined $1.50 ton.

The running time of formula feed manufacturers averaged 40 hours last week. The election day holiday was expected to tighten shipping positions this week.

Central States

The feed business perked up slightly during the week ending Nov. 6, but mills said tonnage still was running lower than last year.

Good weather prevailed over the area and this was thought to be a continuing factor in slower sales. Hog feeds continued to move well during the period and cattle feeds were still on the slow side. Broiler prices remained depressed.

Mills generally reported a one or two day backlog of orders and all were maintaining a five-day week.

Southeast

The feed business was reported to have slowed down from the past few weeks. Feed brokers reported that ingredient buying was at a slow rate and sales activity was on the slow side. Ingredient prices remained about steady and little change was noted. As a result, it was reported from most sources that feed prices held about steady and feed mill running time was only fair except for strictly poultry feed manufacturers whose business has been good.

Baby chick placements in the north Georgia area continued to hold at a high rate and prices suffered due to the oversupply situation of broilers.

Many cotton seed crushers contend that their season's operations will have been completed by early December and it is very likely that supplies of cottonseed meal will be short after that time due to the curtailed production. Truck deliveries were still running behind earlier expectations due to poor fruit and vegetable movement from the section to northern destinations. This situation is expected to improve in the very near future. Citrus pulp production continued to lag and at this time supplies were expected to be short until at least early December. Most buying by purchasing agents of feed manufacturers was for nearby shipment only with very few sales being reported for deferred delivery.

Ohio Valley

Weather Bureau reports that area temperatures during October were 40% below normal, and with the colder weather continuing during early November, there is hope that it will mean substantial and sustained increases in sales of formula feeds. Cold weather in this area was the exception rather than the rule in recent winters.

The cold weather has eliminated pasturage much earlier than in many years, and this situation has resulted in steadily increasing sales of manufactured feeds during recent weeks. This has been noted especially in demands for dairy and hog feeds, although all types, except turkey feeds, are now selling well above early fall tonnages.

A significant phase was the gradually increasing sale of chick starter feeds, which had been in but little demand for many months. This indicated increasing placements of baby chicks on valley farms. If this continues, it will serve as a welcome broadening of the formula feed market in the area.

The present activity is making it necessary for area mills to operate on two shifts on full five-day schedules, and several plants report both third-shift and six-day operations in efforts to keep up with order backlogs.

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